BOROUGH OF NEWCASTLE-UPON-TYNE.

REPORT

OF THE

MEDICAL OFFICER OF HEALTH

ON THE

Sanitary Condition of Newcastle-upon-Tyne,

WITH

TABULAR RETURNS, DIAGRAMS, &c.,

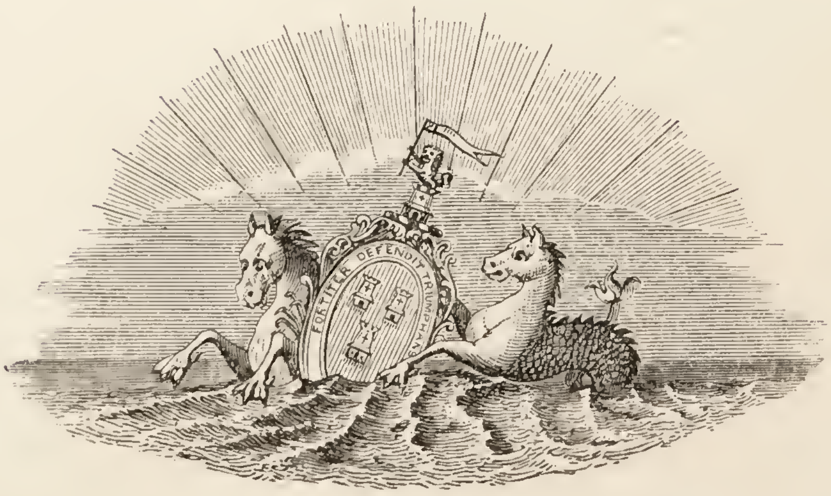
OF THE

SICKNESS AND MORTALITY

DURING

THE YEAR 1879.

Presented to the Sanitary Committee 24th March, 1880, and
Ordered to be Printed.



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TO THE CHAIRMAN AND MEMBERS OF THE URBAN SANITARY
AUTHORITY OF NEWCASTLE-UPON-TYNE.

Gentlemen,

I beg to lay before you, herewith, my Report on the Sanitary condition of the Borough during the year 1879.

The first Section (A) of the Report deals with Vital Statistics.

The second Section (B) contains a brief account of the more important matters on which advice has been given by the Medical Officer of Health, and the action taken thereon, including *inter alia* particulars of certain interesting outbreaks of Fever.

The third Section (C) consists of observations based on the preceding. In addition to the usual Statistical Tables and Disease Charts, forms of notice for the information and guidance of the public in the prevention of infectious disease and the sanitary construction of houses, are given as Appendices to the Report.

I have the honour to be, Gentlemen,

Your obedient Servant,

HENRY E. ARMSTRONG,

Medical Officer of Health.

Town Hall, Newcastle-upon-Tyne,
8th March, 1880.

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BOROUGH OF NEWCASTLE-UPON-TYNE.

REPORT 1879.

(A.)—STATISTICS.

During the fifty-two weeks ending 27th December, 1879, 5,381 births and 3,458 deaths have been registered in the Borough. The births represent an annual rate of 36·6 and the deaths an annual rate of 23·5 per 1,000 of a population of 146,948 persons at all ages, as estimated by the Registrar-General to the middle of the year. A comparison of the rates of birth and death in the different Registration Sub-districts of the Borough during 1879 and the previous year is subjoined.

Rates of Birth and Death per 1,000 Population (Estimated).

Registration Sub-district.	Birth-rates.		Death-rates.	
	1879.	1878.	1879.	1878.
Westgate*	34·2	36·1	21·4	20·6
St. Andrew's	26·9	27·8	18·5	20·2
St. Nicholas'†	30·5	30·8	40·2	36·4
All Saints'	36·0	36·1	22·3	21·5
Byker	57·7	60·9	29·0	32·6
Borough	36·6	38·8	23·5	23·7

* Workhouse. † Infirmary and Fever Hospital.

The relatively high rates for the Registration Sub-district of Byker indicate an under-estimate of population. The mean annual birth-rate of Newcastle per 1,000 population during the five last preceding years (1874-8) is 40·2, and the mean annual death-rate 24·8. In the first or spring quarter the rate of general mortality is 2·5 lower than the average of 23 "large towns" of the United Kingdom, but 2·1 higher than the corresponding rate of last year in Newcastle; (see Appendix No. I., Table II.); in the second or summer quarter it is 2·7 above the average of the large towns, and 3·3 above that of 1878 in Newcastle; in the third quarter it is 2·4 above the average of the large towns, but 4·6 below that of 1878 in Newcastle (chiefly owing to the absence of the usual epidemic of diarrhœa at this season); and during the fourth quarter it is 1·9 below the average of the large towns and 1·4 below that of 1878 in Newcastle.

The condition of the different Sub-districts in regard of mortality from the Miasmatic order of the Zymotic class of diseases during last, as compared with the preceding year, is as follows :—

SUB-DISTRICT.	Number of Deaths from Miasmatic Diseases.	
	1879.	1878.
Westgate	299	267
St. Andrew's	42	74
St. Nicholas'	55	62
All Saints'	107	118
Byker	121	183
Borough	624	704

The relative mortality from the CHIEF ZYMOTIC DISEASES, viz. :— Small-pox, Measles, Scarlet Fever, Diphtheria, Whooping Cough, "Fever" (including Typhus, Enteric, and continued Fevers), in the Registration Sub-districts* during the successive seasons of the year is as follows :—

NUMBER OF DEATHS IN 1879.

	WESTGATE.†					ST. ANDREW'S.					ST. NICHOLAS'.					ALL SAINTS'.					BYKER.				
	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Small-pox ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Measles	5	13	6	1	25	3	2	...	2	7	6	6	...	1	13	8	9	2	1	20	18	7	2	...	27
Scarlet Fever ...	28	32	26	82	168	1	7	4	5	17	1	1	2	12	16	11	8	7	15	41	10	11	3	17	41
Diphtheria ...	1	...	1	...	2	1	...	...	...	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...
Whooping Cough	7	13	6	4	30	1	1	1	1	4	1	...	...	5	6	4	3	7	1	15	13	3	5	3	24
Typhus	...	...	...	1	1	...	...	...	...	...	1	...	...	...	1	...	...	1	4	5	...	1	...	...	1
Enteric(orTyphoid) Fever	7	6	5	2	20	1	...	...	...	1	3	1	...	...	4	2	1	1	...	4	3	...	1	...	4
Diarrhœa	3	10	4	3	20	...	2	6	...	8	2	2	...	3	7	3	2	4	3	12	2	4	5	3	14

---

* Corrected by distribution of the deaths in the Fever Hospital to the district from which each patient came.

† Exclusive of Benwell and Fenham.

The rate of mortality from the chief Zymotic diseases in the Borough is 3·7 per 1,000 population, as compared with rates of 4·4 and 2·4 respectively in 1878 and 1877. The principal factors in the class are:—

Measles, from which a total of 98 deaths are recorded against 17 in 1878.
Scarlet Fever „ 284 „ „ 219 „
Whooping Cough „ 80 „ „ 87 „
Enteric Fever „ 33 „ „ 52 „
Diarrhœa „ 61 „ „ 218 „

DISEASES OF THE RESPIRATORY ORGANS.*

Under this head 562 deaths are recorded as against 452 in the year last preceding. The two most prominent diseases of the order—Bronchitis and Pneumonia have together caused 501 deaths as compared with 385 in the year 1878. The following Table shows the number of deaths from the two diseases in each Sub-district during the successive quarters of the year :—

DEATHS FROM BRONCHITIS AND PNEUMONIA.

A.D. 1879.	REGISTRATION SUB-DISTRICTS.					BOROUGH.	Number in previous year (1878).
	Westgate (Workhouse)	St. Andrew's.	St. Nicholas' (Infirmary).	All Saints'.	Byker.		
1st Quarter ...	37	25	10	41	34	147	104
2nd Quarter...	66	18	12	34	12	142	100
3rd Quarter ...	33	13	7	28	16	97	64
4th Quarter ...	47	13	12	23	20	115	117
Year	183	69	41	126	82	501	...
Number in previous Year (1878) ...	131	39	35	85	95	385	...

The incidence of the greatly increased mortality from these two diseases on the three first quarters only of the year is explained by the relatively low temperatures of these periods as compared with those of 1878. In the first quarter the mean temperature was 36·10 deg. Fahr. against 41·3 deg. in 1878; in the second quarter 47·2 deg. against 51·2 deg.; in the third 56·1 deg. against 59 deg.; and in the fourth 40·7 deg. against 41·7 deg.

In Byker, the deaths from Bronchitis and Pneumonia are shown to be fewer than in 1878. The number in this Sub-district during the first quarter is considerably above that in the corresponding portion of the previous year (24).

---

* Laryngitis, Bronchitis, Pleurisy, Pneumonia, Asthma, and other *Lung disease* (not Consumption).

INFANT MORTALITY.

The number of children dying before the completion of the first year of life is 784 as compared with 888, 842, and 971 during 1878, 1877, and 1876 respectively:—

	No. 1. Deaths of Children under 1 year of age.		No. 2. Rates per cent. of Deaths under 1 year to Births registered.		No. 3. Death-rates of Children under 1 year of age per 1,000 estimated Population at all ages.	
	1879.	1878.	1879.	1878.	1879.	1878.
Westgate	267	355	11·6	14·3	4·0	5·4
St. Andrew's	73	86	13·6	12·0	3·6	4·3
St. Nicholas'	79	56	25·8	17·5	7·9	5·4
All Saints'	177	170	17·0	16·4	6·1	5·9
Byker	188	221	15·6	17·9	9·0	10·9
Borough	784	888	14·6	16·2	5 3	6·1

The foregoing shows improvement, as regards infant mortality, in Westgate and Byker, under each of the three divisions of the Table. In St. Andrew's there is a decrease as regards actual number of infantile deaths, and proportion of these to estimated population at all ages, but an increase as compared with births. St. Nicholas' and All Saints' show an increase under each of three divisions of the Table; in the former of these districts the number of births is 306 against 320 in 1878, and in the latter 1,039 against 1,038.

NON-CERTIFIED DEATHS,

That is to say, deaths registered *without any medical certificate whatever having been given or inquest held,* have contributed 124 cases to the general mortality as compared with 119 in the previous year. Eighty-two, or about two-thirds of these are those of infants under one year of age, and of this number no less than 56 are attributed by the parents or guardians—with what degree of truth it is impossible to say—to two diseases (Convulsions 33, Debility 23). That this painful proof of neglect is, as usual, associated with, and in varying degrees consequent on, poverty, ignorance, and perhaps crime, appears from the fact that the largest relative share of the whole number of uncertified deaths under one year, and the largest actual share of those from the two diseases specified, is borne by the Sub-district of All Saints' (Appendix I., Table X.), in which the largest proportion of the lowest class of the population resides. Of the entire number of uncertified deaths 31, or 25 per cent., *are entered on notification from the Coroner that no inquest was necessary;* of these 13 cases are those of children dying before the completion of the first year of life, and 6 those of children dying between the first and second years of life. In the previous year the number of uncertified deaths was 119, including 56 under one year, 6 aged one year and under two years, and 57 aged two years and above. There is, therefore, this year an increase of 46 per cent. of those in the first of these divisions. Of these in the year under report 16 (on 13 of which the Coroner was consulted) are registered under the vague and unsatisfactory heading "natural causes;" the cause of 1 is returned as "not known;" 3 are entered as being due to "supposed Convulsions;" 2 to "supposed Heart Disease;" and 1 to "Inflammation."

During the year 117 accident cases were "under the influence of drink" when brought to the Newcastle Infirmary,* as compared with 321 cases in the preceding year.

MARRIAGES.

The number of marriages, which in last Report was stated to have shown a marked and steady annual decline in each of the five years ended March, 1878, exhibits a continued decrease during the subsequent year. The number registered in Newcastle-upon-Tyne† in the twelve months ended 31st March, 1879, is 1,646, being the lowest of an annually diminishing series since the year ended March, 1874, when it was 2,314. Connected with the declining marriage-rate is that of births, which corresponds. The births in the same area continue to decline, 5,602 having been registered in the calendar year 1879, and 5,689 in the previous year against 5,988 in 1876.

(B.)—ADVICE TENDERED AND ACTION TAKEN.

(1.)—ZYMOTIC DISEASE.

(a.)—Fever Hospital.—In accordance with the instruction of the Sub-Committee on the Fever Hospital, the Medical Officer of Health submitted to the Sanitary Committee in September last, the following Report of Patients admitted to the Fever Hospital during the ten years prior to the transference of the Institution to the Corporation :—

---

* The information is kindly furnished by the House Surgeon, Dr. J. D. Dixon.

† Superintendent Registrar's District, which includes the Municipal Borough and the Townships of Benwell and Fenham.

Year.	Admissions.	Deaths.	Rate of Mortality per Cent. to Admissions.	Cases of Typhus contracted in Hospital.
1864	185	?	?	
1865	259	52	20·0	2 nurses, 1 matron, 1 inspector ill. The latter died.
1866	565	115	20·3	1 matron died; 1 inspector and 6 nurses ill, 2 of the latter died.
1867	299	52	17·3	
1868	400	75	18·7	
1869	177	20	11·3	1 night-nurse ill.
1870	208	25	12·0	1 night-nurse, cook, and servant ill.
1871	403	55	13·6	8 nurses and 1 servant ill.
1872	882	176	20·0	Assistant matron and a nurse ill; nurse died.
1873	230	32	14·0	

"From the above it will be observed that the rate of mortality has risen with the increased number of admissions. In the above period, 1 Physician and 3 Medical Officers caught Fever at the Hospital, and 1 of the latter died. From 1865 to 1873, 27 residents in the Hospital, viz., 19 nurses, 3 matrons, 2 inspectors, and 3 servants contracted Typhus, of whom 5 died, viz., 3 nurses, 1 matron, and 1 inspector. The above cases are all attributable to the defects of accommodation, and ventilation of the Hospital. The following extract from the Annual Report of the Committee to the Governors of the Fever Hospital, (submitted to the Sanitary Committee with the foregoing), shows the condition of affairs at the Hospital in 1866.

'The Committee regret to state that they have been obliged to refuse admission to many persons suffering under Fever, there being no room in the house at the time of their application. Every effort was made to meet the emergency, and for a short time the house was crowded to an extent that was only justifiable by the absolute want of any other place in which Fever patients could be received, and the danger to the community of leaving so many centres of infection unremoved, a result which would inevitably have followed if they had been refused admission into this institution. Ultimately, however, the Committee, acting under the advice of their Medical Staff, felt themselves obliged to limit their number of patients.'

"Since that time, notwithstanding the addition of a wooden building for the treatment of patients, and the opening of a house at Byker to which the convalescents were removed from the Hospital, the wards were filled with Small-pox cases in 1871."

In April, the Medical Officer of Health, with the sanction of the Sanitary Committee, forwarded to the Local Government Board, along with replies to queries on Hospital-accommodation for infectious cases, the following:—

"*Report on the working of the arrangements for the isolation of cases of Infectious Disease, and upon the influence which it has exercised upon the spread of infection.*

"The arrangement works fairly well, so far as it goes, *i.e.*, amongst the poor. Typhus, which at one time was endemic and frequently epidemic, has several times broken out during the past five or six years, but has of late always been effectually stamped out at an early period by prompt isolation of patients in Hospital, most of whom are admitted at the cost of the Sanitary and Poor-Law Authorities. The Hospital was also of great service in the severe epidemic of Small-pox during the years 1871-2.

"The admissions from Scarlet Fever and Measles are always few in number in proportion to the cases in the Borough, on account of the objection of parents to their children leaving home. For want of infectious wards for children, with special arrangements by which, if necessary, mothers may be isolated with, and nurse, their own children suffering from Measles and Scarlet Fever—epidemics of these diseases cannot be effectually dealt with.

"Many infectious patients of the artizan class, who might be expected to defray their own expenses, object to the charge, but would go readily to the Hospital if admission were free. The home treatment of Febrile diseases by the Dispensary prevents many cases from being removed to Hospital. The Medical Officers recommend their infectious patients to go to Hospital, but the governing body of that institution, though desirous of preventing the spread of disease, do not consider they would be justified in allowing their officers to discontinue attendance. The Hospital is not used by patients in good circumstances. As a rule these cannot be properly isolated in private houses. Comfortable private wards for such cases are needed. The subject is at present under the consideration of the Sanitary Authority.

"Isolation is the most effectual means of preventing the spread of infection. For this object Hospital accommodation should be ample, easily available by the poor, and attractive to those in good circumstances."

The Committee have been, as usual, advised from time to time of the cases removed to the Fever Hospital, of which a detailed list is given (Appendix I., Table XIII.)—The admissions this year have been remarkably few, having been 38 only in all. The most noteworthy particulars as to the admissions are those referring to two outbreaks of Typhus in different parts of the town, both of which were effectually checked by removal of the cases to Hospital. In one of these outbreaks, which was localized in the Swirle, St. Ann's Street, Anchor Bank, and New Road, 11 cases came under observation between the middle of September and the end of December. All were connected with each other by contagion. All except one case (under private medical treatment) were removed to Hospital. The other outbreak occurred in two families in Concord Court, Manors, during October and November.

This consisted of four cases in two families (of which three were removed to Hospital). There was a case of the same disease near the foot of Pilgrim Street, in July (also removed to Hospital). No history of contagion between either of the two last with the first group, or with each other, was ascertained. The remaining cases admitted to Hospital during the year consist of 11 of Enteric Fever, 8 of Scarlet Fever, 1 of Diphtheria, and 3 of other diseases. Three of the cases of Scarlet Fever were those of resident assistants in a drapery establishment (the same as that mentioned in last year's Report as having sent to the Hospital five assistants suffering from the disease.) There was a period of about a year between the two sets of cases, all of which occurred in the same two rooms. After the isolation of the five patients and the thorough disinfection of bedding, &c., in the stove of the Corporation, no further extension of infection was reported. Comment on other admissions to Hospital during the year is unnecessary. Of the total admissions, the maintenance expenses of

15 are chargeable to the Poor-Law Authority.
9 „ „ Sanitary Authority.
9 „ „ Private Persons (full rate.)
4 „ „ „ (reduced rate.)
1 is „ „ Infirmary.
—
38

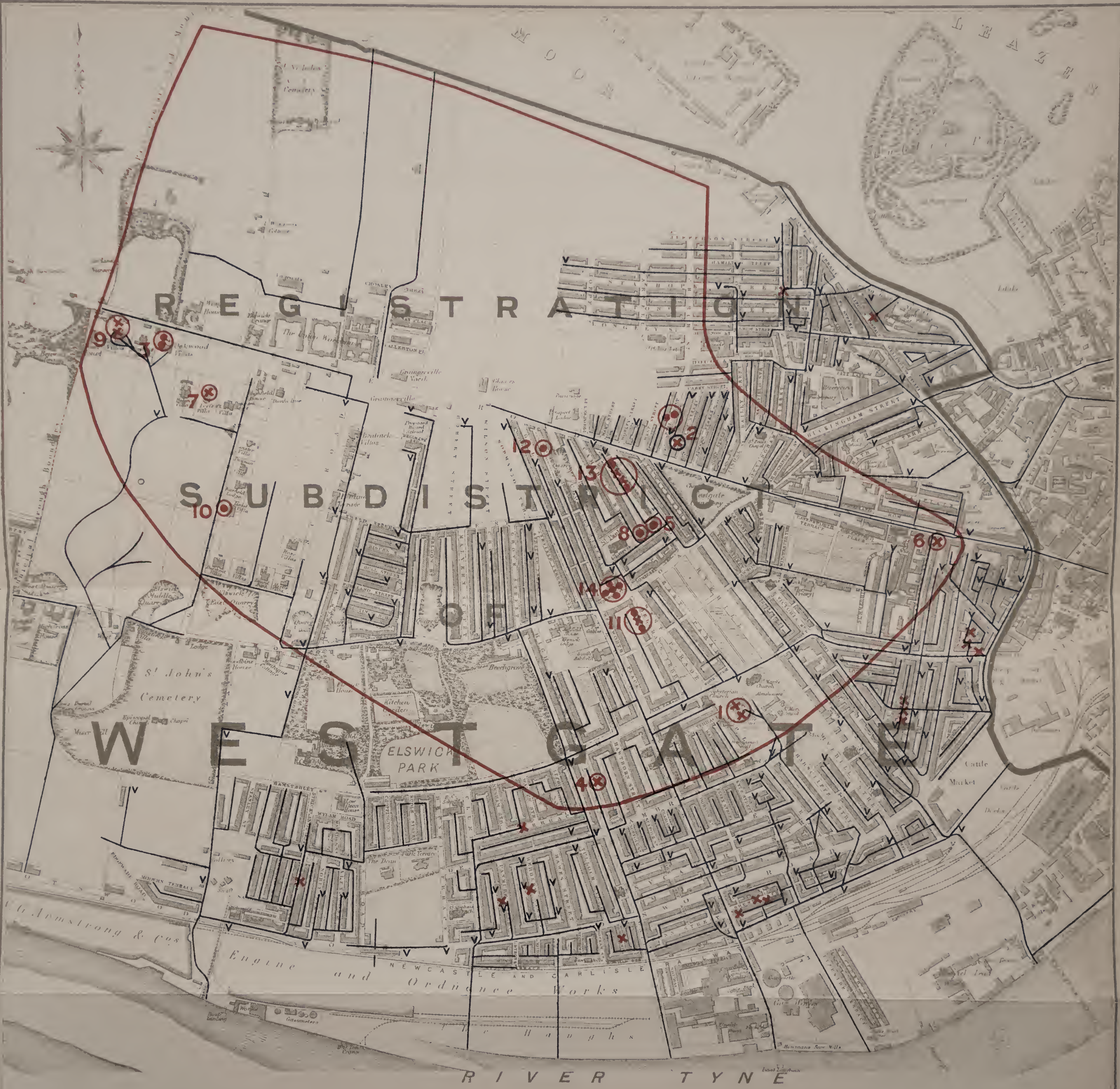
(*b.*)—The following Special Report was submitted to the Sanitary Committee in September :—

BOROUGH OF NEWCASTLE-UPON-TYNE.

REPORT ON AN OUTBREAK OF MALIGNANT SCARLET FEVER IN THE REGISTRATION SUB-DISTRICT OF WESTGATE.*

INTRODUCTION.—During the month of June last, several remarkably sudden and rapidly fatal cases of malignant Scarlet Fever occurred in the higher half of the Registration Sub-district of Westgate. There had been cases of a similar character in May in the family of the principal of a large public institution near the centre of the district, from which it was suggested that contagion might have extended to some of those subsequently attacked. The probability that this was not so will afterwards be shown, but the circumstance is mentioned here to explain how the cases came to be investigated in relation to each other.

* The names of persons and places were given in the original report, but are, for obvious reasons, omitted here.


REGISTRATION SUBDISTRICT OF WESTGATE
LEAZES
TOWN MOOR
ELSWICK PARK
St John's Cemetery
Cattle Market
Newcastle and Carlisle Railway
Engine and Ordnance Works
Sir W. G. Armstrong & Co's
The Haughs
RIVER TYNE
1
2
3
4
5
6
7
8
9
10
11
12
13
14

EXPLANATION.

The plan shows the total mortality from Scarlet Fever, with certain cases, not fatal, of the same disease, during the months of May and June, 1879, in Westgate Sub-district.

The crosses (✖ *) represent all the registered deaths from Scarlet Fever in the Sub-district. One death only from Scarlet Fever (that within the blue circle) occurred within the large area surrounded by the red margin, except in families supplied with suspected milk. The case is known to have been due to contagion brought into the house by a brother who contracted the disease outside the district.*

The dots (● *) represent cases not fatal taking suspected milk.*

The small circles (○ *) show the deaths, and, so far as can be ascertained, the cases not fatal in each household supplied with suspected milk.*

The red numbers (**1, 2, 3** *&c) indicate the order in which the different households were infected with the disease.*

The blue lines indicate the position and course of the main sewers, and the **V***'s show their ventilators.*

LOCALITY AND POPULATION OF THE SUB-DISTRICT OF WESTGATE.—The municipal portion of the Registration Sub-district of Westgate includes the townships of Westgate and Elswick; it comprises roughly all the Borough lying to the west of Barrack Road, Bath Lane, and Forth Banks, and forms an irregular square of about one-and-a-quarter miles across, containing an estimated population of 67,171 persons, or almost half that of the entire Borough, which is 146,948.

MORTALITY FROM SCARLET FEVER IN WESTGATE.—During May and June of this year 26 deaths from Scarlet Fever were registered in the Westgate Sub-district, viz.:—10 in the former month, and 16 in the latter. The locality of each of these deaths is indicated by a red cross, on the plan of which accompanies this Report. Attention was drawn more particularly to the cases in the higher part of the district by the fact that Scarlet Fever had not for some time previously been reported there. During winter and spring the disease was prevalent in the lower portion of Westgate only. Another circumstance which gave prominence to the disease in the higher part of the district was that several of the children were struck down at or near the same time. The features and symptoms also of the cases, as described, indicate a virulence of type seldom observed except in a wide-spread epidemic, which this small outbreak cannot properly be called, and were therefore calculated to attract notice. In addition to these, the suburban situation of the dwellings of several of the families affected rendered the cases more notable. For these and other reasons, and from a special circumstance presently to be considered, the Report will deal with the disease observed in the higher or northern and north-western part of the district, *i.e.*, the area limited by Cambridge Street, Park Road, Elswick Road, the Borough Boundary from Elswick Road to near Barrack Square, a line thence to the east end of Blandford Street, and thence to Cambridge Street. This area, which is irregular in form, is defined by the red marginal line on the plan.

Of the 27 deaths from Scarlet Fever in the entire Sub-district of Westgate during May and June 11, viz.:—3 in May and 8 in June, occurred in the area in question. In the course of an extended enquiry into these cases, others, associated with them but not fatal, came under observation. No other cases of Scarlet Fever within the area have come under the notice of the Health Department. Particulars of all of these are given in the following:—

Table, showing Deaths from Scarlet Fever and cases not Fatal during the Months of May* and June, 1879, within the Area under Report (Northern and North-Western Part of Westgate Sub-district)

No. of Cases in order of occurrence.	Date of commencement of observed illness.	Fatal or Not Fatal.	Total duration of Fatal Cases.	No. of the Case in Family.
1	May 14	F.	36 hours	First.
2	,, 16	F.	51 hours	Second (same family as No. 1).
3	,, 31	N. F.	......	First.
4	June 1	N. F.	......	First.
5	,, 5	F.	15 hours	First and only.
6	,, 6	N. F.	......	First.
7	,, ,,	F.	4½ days	First and only.
8	,, ,,	F.	3½ days	First and only.
9	,, 7	N F.	......	First and only.
10	,, ,,	F.	5 days	First.
11	,, ,,	F.	7 days	Second (same family as No. 10).
12	,, ,,	N. F.	......	First.
13	,, 8	N. F.	......	Second (same family as No. 4).
14	,, 9	N. F.	......	First.
15	,, 10	N. F.	......	First and only.
16	,, 14	N. F.	......	Second (same family as No. 3).
17	,, 16	N. F.	......	First.
18	,, 17	F.	36 hours	Second (same family as No. 17).
19	,, 19	N. F.	......	First.
20	,, 21	N. F.	......	Third (see Nos. 17 and 18).
21	,, 22	F.	29 hours	Fourth (see Nos. 17, 18, and 20).
22	,, 27	F.	22½ hours	Second (see No. 14).
23	,, 29	N. F.	......	....

* A case fatal on May 1st, and others not fatal in the same family are not included in the table, the disease having shown itself before the beginning of the period under Report. In this instance infection was introduced into the house by a brother who was sent home ill of the disease from beyond the area.

The table shows that the disease attacked fourteen households and caused twenty-three cases of which ten were fatal. Four cases, two of them fatal, occurred in one family; two cases each, all fatal, in two families; two cases, one fatal, in one family; single cases, all fatal, in three families; two cases, none fatal, in three families; and single cases, not fatal, in four families. In addition to the above in July a third case occurred in one, and three cases in another, of the families having two cases previously.

By referring to the dates of commencement of illness, it will be observed that in point of time the first fifteen cases are arranged in three groups, the first group being that of two fatal cases in the same family on the 14th and 16th of May; the second that of two cases not fatal occurring about a fortnight later in separate families; and the third, the large group of eleven cases, occurring from the 5th to the 10th of June. With two exceptions, the latter were all first invasions of as many different households. Eight of these cases, of which no less than five died, first showed symptoms of ailment on one of three consecutive days. From the 10th to the 16th there were no invasions of fresh households; but, on the latter date, the first of a series of four cases (two being fatal) in one family took place; and from this time to the end of the month, the subsequent cases were more regularly divided as to date of seizure.

The mortality is ten deaths in twenty-three cases—*i.e.* above 43 per cent.; or, including the four cases in July, which are connected with the others, 37 per cent. The ages of the fatal cases were:—

3 and under 4 years	... ...	2 cases.
4 „ 5 „	... ...	2 „
5 „ 6 „	... ...	1 case.
6 „ 7 „	... ...	2 cases.
11 „ 12 „	... ...	1 case.
12 „ 13 „	... ...	1 „
19 „ 20 „	... ...	1 „

The course of the fatal cases was short, and, in some instances, remarkably so. Thus, the length of time from the first symptom of ailment until death was:—

In 1 case	... ...	15 hours.
„ 1 „	... ...	22½ „
„ 1 „	... ...	29 „
„ 2 cases	... ...	36 „
„ 1 case	... ...	51 „
„ 1 „	... ...	3½ days.
„ 1 „	... ...	4½ „
„ 1 „	... ...	5 „
„ 1 „	... ...	7 „

Common Causes of Outbreaks and ordinary Media of Contagium of Scarlet Fever considered in relation to the Cases under Report.—The infection of Scarlet Fever may be communicated from the sick to the healthy in four ways, viz.:—1st, by direct contagion; 2nd, by material on which infective particles may rest, such as clothing, food, or solid substances in general; 3rd, by the air; and 4th, by liquids, especially such as are portable. The foregoing may be accepted as the only known means by which an individual previously uninfected may contract the disease, for no reliable evidence as to the spontaneous origin of Scarlet Fever has been adduced. To arrive at the probable cause of the recent outbreak, it will be necessary to examine these different means of communicating infection with the object of ascertaining to what degree each may or may not have had effect.

(1st.)—*Direct Contagion.*—Although this may have acted between different members of the same family, yet, as a means of spreading disease from house to house, in the present instance it may practically be dismissed from consideration. There was at first a suggestion that case No. 10 might have received infection directly from No. 1 or 2; but it was satisfactorily shown that the children, Nos. 10 and 11 (two brothers) were not within three-quarters of a mile of Nos. 1 and 2 from the first appearance of illness of the two latter, who were also, by good fortune, separated from the other children of their own family the night before they themselves took ill; and were isolated in a most effectual manner from the beginning to the end. Besides, the illness of Nos. 10 and 11 did not commence until twenty-four days after that of No. 1, which is of itself evidence that the contagium was neither communicated immediately from one household to the other, nor contracted from a common cause at the same time.

With regard to the direct contact of the inmates of the remaining infected households with each other there is the strongest evidence against this having taken place. The propagation of the disease by this means, therefore, may be set down as out of the question.

(2nd.)—*By Solid Material.*—Not the slightest indication of evidence has been adduced that the spread of the disease was in any way due to this agency. With one or two exceptions the families were quite unknown to each other, and, so far as could be ascertained, in no instance whatever did any solid article pass from any infected house to any other house subsequently attacked.

It was suggested that the first family attacked in the area owed the disease to infection brought from a distant part of the Borough ; but there is no evidence in support of this theory, and much against it.

(3rd.)—*By Air.*—Had the disease been due to any meteorological condition or unusual state of the general atmosphere, the outbreak would not have been limited to the clearly-defined and comparatively small area of its incidence; but, judging from the malignancy of the cases, would have swept the entire town. Had it depended on local contamination of the external air, as by exhalation from offensive privies and middens, or the generation of pestilent gases from the stagnant filth of obstructed sewers (each in its way a potent cause of the development of the seeds of fever), it would probably have been more rife elsewhere than here, for in the northern division of Westgate the privy system is not in general use, and is absent in the neighbourhood of all [or most] of the households affected; the sewers also have an exceptionally good fall, and there does not appear to be any valid reason for concluding that the disease was associated with, or due to, deposit in them during the water-famine of last winter. Neither is there evidence that specific infection was conveyed from the first case to others through sewers and drains. By reference to the map, which shows the various houses numbered in the consecutive order of their invasion by the disease, and also the lines of sewerage throughout the district, it will be seen that though houses Nos. 2 and 3 are on higher levels than No. 1, and might be thought to have received sewer air from No. 1, they cannot have done so, as they are each situated on separate lines of sewerage in no way connected with that of No. 1. Again, although several others of the affected households are situated in streets above No. 1, none of them are in communication with the sewer into which the drainage of that household falls ; besides this, no other household draining into that sewer was attacked. Reference to the map will give abundant additional evidence that sewer air was not the vehicle of infection.

Was the Outbreak due to the sanitary defects of private houses?——The sanitary arrangements of few houses indeed are perfect, and none of those infected were so. They were, in one or two instances, bad, but in others fairly good, and altogether many may be classed as average. In the house where the disease was most severe (No. 13 four cases, two fatal), the water-closet was outside and the water supply for drinking and cooking was not liable to contamination in cisterns, being derived directly from the main ; the principal defect was an untrapped drain in the yard. Although it is in accordance with established facts that the malignancy of any particular case of Scarlet Fever will be in direct ratio to its insanitary surroundings, it is equally well understood that such surroundings will not of themselves give rise to the disease ; and this is exemplified in the present instance, for none of the sanitary defects alluded to were of recent occurrence, and one or all would be equally operative years ago.

(4th.)—*Liquids*—*Water.*—The water supplied to the infected houses is that of the Water Company, in common with all or most of the others in the area. The quality of the water has not been alluded to as being in any way the cause of the outbreak, neither has there been the slightest reason to suspect it. There is probably no instance on record of an outbreak of Scarlet Fever spread by this agency.

Milk.—There remains for consideration only one known medium for the communication of the infection of the disease under Report, viz., *Milk.*

At an early stage of the enquiry, attention was drawn to the fact that several of the households attacked were supplied directly with *milk* by the same dairyman, who kept a farm in the country. Others obtained their milk, through retailers, from the same source. It was known that the household first affected was supplied by a different dairyman, also from the country ; but it was not discovered until later, that this and the other families, obtained their milk from the same neighbourhood, and probably from the same source. Suspicion being roused with respect to the milk supply, it became necessary to visit the dairy farms, which was done by the writer in company with the Medical Officer of Health to the Rural Sanitary District in which both dairies were situated, together with one of the agents of the property.

Facts associating the Outbreak with a particular Milk supply.—It was found that the two farms adjoined each other, and that the two dairymen were in the regular habit of accommodating each other with milk for the mutual convenience of business. The knowledge of this fact linked the first cases of the outbreak to the rest. One object of the visit to the dairies being to ascertain whether there were any other cases of Scarlet Fever not previously known to the Health Department among the customers of either dairy, the dairymen were asked for and readily furnished lists of their customers. These were partly private persons and partly retailers. The latter were in turn asked for and with one exception* only, gave the names and addresses of the persons regularly supplied by them with the suspected milk. By these means the area over which the milk was distributed was ascertained with tolerable accuracy, and was found to correspond with that enclosed in the red margin on the plan. *With one single exception, all the households found to be attacked within the area derived their milk directly or indirectly from one or other of the two dairies referred to.* All the households affected, except two, were supplied with milk from one of the dairies. Of these two exceptions, one (the first house attacked) was supplied solely from the other dairy ; the other exception received milk regularly from both dairies. Most, if not all, of the patients were in the habit of taking the milk in an uncooked state. The most rapidly fatal case was that of a child who took ill soon after drinking freely of the milk. In another family three children fed with this milk took ill, and one of them died ; the fourth child supplied, for special reasons, with milk from a particular cow at a different dairy, escaped. The grouping together of the cases as regards date of occurrence would appear partly to indicate some common cause which, other causes as is believed, having been shown to be inoperative, is probably milk. This hypothesis is supported by the fact that several times during May and June the milk was complained of as having an unpleasant smell or taste, and did not keep well ; (this was more particularly the case with the supply from one dairy than that from the other). At one house where there were five cases of Scarlet Fever, the smell of the tin left by the milkman was noticed by the writer to be offensive. It was observed on different occasions that the milk in question rapidly became sour at a time when other milk kept ordinarily well. It is but just to add that the dairy, in the custom of which the majority of the cases occurred, had previously enjoyed a high and, so far as the cleanliness of the dairy and the quality of the stock are concerned, apparently, a well-founded reputation. The fact that, of the households supplied with the milk, more escaped than caught the disease does not negative the hypothesis that the milk was in fault ; for contagium, being particulate, affects that part only of the medium in which it occurs ; and if a small number of these particles be contained in a large quantity of such a medium as milk, it will readily be understood that a considerable part of the medium may be entirely free from them, and perfectly harmless. The same argument applies to the case of one of the infected families, in which four children were attacked, while the fifth, who with the others, had been fed on the suspected milk, escaped.

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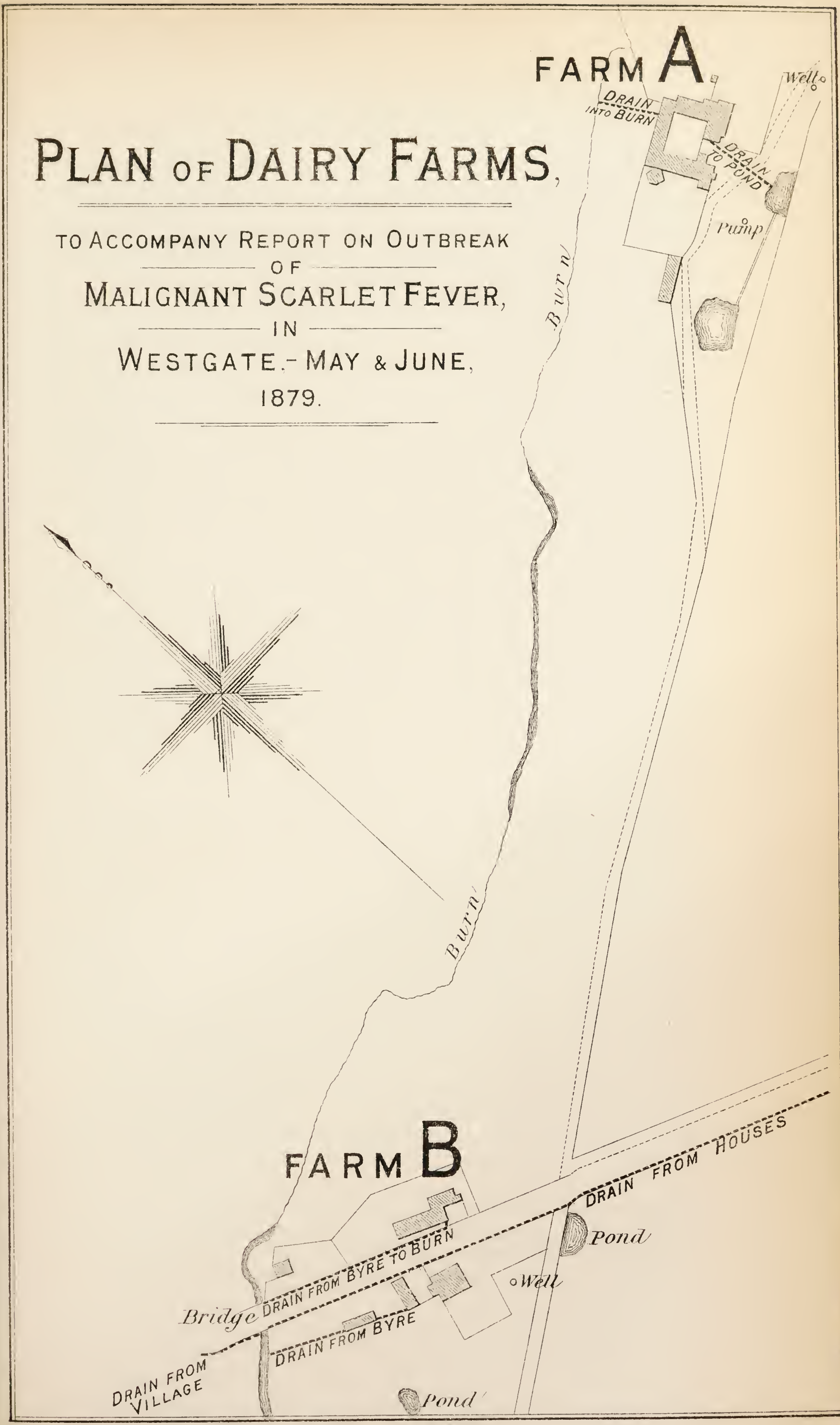
* In the custom of this person, who supplies between fifty and sixty families with milk, two households were attacked with a most virulent form of the disease. In one house three children were affected, and one died (Nos. 14, 22, and a third in July) ; in the other there were four cases, of which two died.

The circumstantial evidence, therefore, leads to the conclusion that the communication of the disease was intimately associated with the milk supply. There remains to be considered the question of its liability to contamination or infection prior to delivery to the customers. Before passing to this, it is to be observed that the mode of delivery, as frequently practised, is itself calculated to aid in the spread of infection. The country dairyman who supplies private customers in town, generally delivers the milk in small tin bottles, which are frequently taken into the house to empty and are often left there until his next visit. They are not always washed before being returned to him, even though the house be infected (as was observed in one instance during the inquiry), and may spread disease by being used again for other customers without being properly scalded.

As before stated the dairies were visited. Both are situated on the bank of a burn or brook near Newcastle. That in whose custom all the cases, except two of the outbreak occurred, is marked (A) on the accompanying plan; the other is marked (B) on the plan, one being on each side of a main turnpike. The milk-house at each farm was clean and sweet. The dairy-keepers at both places answered, without hesitation, the questions put to them, and appeared to give all the information and assistance in their power. From their replies and by observation many important particulars regarding the production of the milk were ascertained. The general conclusion derived from this portion of the investigation was, that although the dairies (A) and (B) are in many respects superior to most of those in the Borough,



PLAN OF DAIRY FARMS,

TO ACCOMPANY REPORT ON OUTBREAK
OF
MALIGNANT SCARLET FEVER,
IN
WESTGATE.- MAY & JUNE,
1879.

Andrew Reid, Newcastle

the business at each place was carried on under conditions favourable to the serious contamination of the milk.

Conditions favourable to contamination of the Milk.—These may be divided into two classes, *direct* and *indirect.*

(*a.*)—*Direct Contamination.*—This includes defects in the arrangements for cleansing the vessels, &c. At both places the common mode of closing the mouths of the tins in which the milk is delivered is by large *cork-bungs*, which soon become penetrated with grease, and cannot be kept sufficiently clean and sweet for the use to which they are put. The *tins* themselves are not always cleansed properly. After every time of being used, each tin should be scrubbed out by hand, rinsed with soda and water, then thoroughly sealded, and finally set to air. Very many of these vessels are too narrow in the mouth to admit the hand, and the other parts of the cleansing process are not always carried out efficiently ; for some of the tins have been found to smell offensively or to be dirty. In one instance the milk delivered to a customer, which was complained of as having an unpleasant smell and taste when warmed, was found to consist in part of the yield of a recently calved cow.

(*b.*)—*Indirect contamination.*—Conditions favourable to the indirect contamination of milk are those by which that fluid is liable to be affected through the medium of the animal yielding it. The first of these to be considered is the quality of the water. That at Farm (A) is derived from four sources, viz.:—The burn, a surface-water pond, a pump, and the pipes of the Water Company. Samples of these waters, forwarded to the Borough Analyst for examination, are reported on as follows :—

DAIRY FARM (A).

Results of Analyses, in Grains per Gallon, of Samples of Water from—

	Burn immediately below the House.	Pond.	Pump.	Tap Water.
	Grains.	Grains.	Grains.	Grains.
Total solid matter	24·400	20·400	28·400	16·000
Chlorine	2·360	1·790	3·640	0·910
Ammonia	0·350	0·140	0·003	0·002
Albuminoid ammonia	0·040	0·025	0·032	0·023

The two first had considerable quantities of matter in suspension, and contained dissolved organic impurity in such large amount as to be quite unfit for use. The position of the burn and the pond are given on the plan, which shows that both receive drainage from the farm-yard. Both are accessible to the cattle in the field near the house.

At a hamlet three-quarters of a mile above Dairy Farm (A), the water of the burn is polluted by the drainage from a large midden. Another and a very serious source of contamination of the stream is the drainage from a knacker's yard, about half-a-mile still higher up. This slaughter-house stands on the brink of the burn, and near it was observed a large and disgusting collection of decomposing livers, guts, and other animal remains. There was also a stinking pool of animal liquid near this refuse, which overflowed into the burn.

At Farm (B) the regular water-supply is obtained from three sources, viz.:—The burn above mentioned, a dirty surface-pond, and the Water Company's pipes. There is a deep well on the premises, but the pump belonging to it has not been in use for several years. The burn and pond were open to the cattle. The water of the burn here is still further contaminated by the drainage from Farm (B) and some other houses, and a village situated on the opposite bank of the burn (see plan). That in the pond was reported by the Borough Analyst to be grossly polluted (0·350 grs. ammonia and 0·150 grs. albuminoid ammonia per gallon). It was about the milk from this dairy that most complaints were made by the customers. The drainage, ventilation, and accommodation of some of the cowhouses at this farm were defective. Some of the cowsheds were merely temporary wooden erections. The cattle did not present so good an appearance as those on the adjoining farm. One cow, which seemed to be ill, was visited and examined at our request by a veterinary surgeon, who, however, gave as his opinion that the animal was not suffering from any ailment by which the quality of the milk would be affected. A sample of her milk submitted for analysis was found to be of good chemical composition.

The two sanitary requirements, perhaps above all others necessary, in the production of milk, are:—(1.) The most scrupulous cleanliness, and (2.) purity of water-supply for dairy purposes. The first is admitted without hesitation by most persons who pretend to any knowledge of the subject. Of the importance of the second few have any adequate idea. Contaminated water, even in such small quantity as adheres to the sides of a vessel rinsed with it, will, as has been shown on good authority, affect the milk afterwards put into that vessel. Epidemics of Fever have been caused in this way. Contaminated water may affect the health of cattle drinking it, or what is worse may, on recorded testimony, so contaminate indirectly the milk they yield as to give rise to serious and fatal illness in the human beings who use it as food. Milk yielded by cattle which habitually drink organically foul water is prone to rapid decomposition, and is more than usually prepared to fertilize and intensify the malignancy of the seeds of any Zymotic disease that are introduced into it. These matters are not properly understood by English dairymen, otherwise more attention would be given to secure a water-supply of good quality. According to Youatt,* "The Dutch, who are remarkable for the excellence of their dairy management, consider the purity of the water supplied to their cattle of so much importance that they will not allow it to be tainted by the breath of the beasts." It is not unlikely that some of the defects complained of in the milk from farms (A) and (B) were due to the polluted water drunk by the cattle.

As to the specific Infection of the Milk.—The question next arises as to whether the milk were *specifically infected* during any stage of its production. A most minute and careful inquiry was made but without eliciting the slightest information that any one on either of the farms had suffered from Scarlet Fever or had been in contact with any infected person. There is no evidence of the water having

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*** Complete Grazier, A.D. 1864, p. 154.**

been so infected, either that with which the vessels were cleansed, or that consumed by the cattle. Even had the latter been known to be infected, the case would not have been by any means clear; for the writer is not aware that the contagium of Scarlet Fever can be conveyed to milk through the cow by means of the water she drinks. In reply to an inquiry on the subject addressed to several Medical Officers of Health, he has elicted that the prevalence of professional opinion is against such a transmission of the disease.

But although Scarlet Fever cannot be traced to either of the dairies, it is known to have been prevalent at no great distance from them not many months before the outbreak among the consumers of the milk. In March the disease was prevalent in a most malignant form at a place situated about one and a-half miles west of the dairies. Infection is reported to have been brought to this place by a young man from a village lying three-quarters of a mile to the south-east of the dairies. There were other cases of Scarlet Fever among children in this village in January and February; and these are known to have caught infection whilst staying with friends who reside on the west side of the dairies. There was also a case of Scarlet Fever in May, at a house about a mile to the east of the dairies. From the foregoing account it will be observed that the disease had been prevalent in the district round the dairies, and that twice infection had passed them. When, with this, is taken into consideration the fact that each of the farms immediately adjoins the highway to Newcastle, the opportunities of intercourse between infected persons and those engaged in the dairy business, and the probability of the direct specific infection of the milk in this way, will not be difficult to understand.

SUMMARY.—The short and sharply defined, though virulent, outbreak described in this Report so closely corresponds with the distribution of a particular milk, that it would appear almost impossible otherwise to regard the two than in the light of cause and effect. The circumstances of the production of that milk were such as directly and indirectly to favour its pollution with organic matter, and there are the complaints of consumers as well as the observation of the writer, that on several occasions it was so contaminated. In this condition it would rapidly promote the development, and intensify the virulence, of any Zymotic poison that might come in contact with it. Although there is no direct evidence of such contact, the conditions and surroundings of the dairy business at the two farms justify the conclusion that there was great risk of such an occurrence.

ACTION TAKEN.—The usual proceedings were taken for the isolation of the sick and the disinfection or destruction of infected articles, with the fortunate effect of preventing, as far as is known, the spread of the disease from any house in the borough to others. The sanitary condition of the dwellings was inquired into, and most of the defects observed were promptly remedied.

We are informed by the agents of the property, that several improvements suggested by us, have been carried out at the dairy farms. At Farm (A) a depositing tank has been provided for the liquid manure from the byres. The higher of the two ponds has been cleaned out and levelled, and troughs, fed by spring water, substituted. The drain which previously discharged into this pond has been diverted to the tank.

At Farm (B) the pond in the field has been drained away, and the company's water supplied in a trough, and the burn has been fenced off from the field.

The *Knackers Yard*, which was a sub-tenancy, and merely tolerated by the landlord, was ordered to be closed, and will not again be permitted to be used.

The above steps were at once, and voluntarily undertaken by the agents of the property, who, on becoming aware of the circumstances, intimated their desire to adopt any suggestions for the improvement of the sanitary condition of the dairy farms.

INDICATIONS.—The experience of this, the first recorded outbreak of Fever attributable to milk, in this Borough, is not without its teachings, which, if duly profitted by, may be of great service in the future protection of the public health. It shows—

(1st.)—That there is much need of a complete system of registration of all cases of infectious diseases. For want of this a great deal of time was unavoidably spent in visits to the houses of all the consumers of the milk whose names and addresses could be got, in order to ascertain as nearly as possible the extent of the outbreak. The difficulty of this undertaking will be understood when it is known that the business of the two dairies, including that of the retailers supplied by them, may be put down as comprising above 350 regular customers, on many of whom it was necessary for us to call several times before the particulars were ascertained. Notwithstanding the time and care bestowed on it, this part of the inquiry remains incomplete. There may have been several undiscovered cases of Scarlet Fever belonging to the outbreak, among the fifty or sixty families supplied by the retailer who declined to give a list of customers; other cases may have occurred among the large number of occasional purchasers whose addresses were not known, and of whom no information was obtainable.

(2nd.)—That a milk business is, under defective management, peculiarly adapted to aid in the dissemination of any infection to which the milk may be subjected.

(3rd.)—That the exceptional nature of the produce, and the risk of contamination and infection to which it is exposed, demand the strict regulation of *all* the sanitary arrangements connected with dairy-cows and the production and distribution of milk for sale ; and that local authorities in preparing to meet this requirement, should act under the advice of sanitary officers of skill and experience.

(4th.)—That local authorities should have the power to compel any milk dealer to furnish a full list of his customers when necessary, for inquiries into outbreaks of disease.

In conclusion, the writer desires to express his thanks to the Sanitary Committee for authority to engage such assistance as was necessary. His acknowledgments are also due to the various Medical Practitioners and Officers of Health, to whose kindness he was indebted during the investigation, to the Agents of the Owner of the farms, to the Veterinary Surgeon, &c.

HENRY E. ARMSTRONG, M.R.C.S.,
MEDICAL OFFICER OF HEALTH.

Health Department,
Town Hall, Newcastle-upon-Tyne,
20th September, 1879.

(c.)—Scarlet Fever at St. Anthony's.—About the middle of the year Scarlet Fever was very prevalent at St. Anthony's, and several fatal cases occurred. Among the cases may be mentioned one at a tavern. The mother of the patient stated that there was no communication by persons passing between the sick-room and the tavern—but whether this was so or not is doubtful. There was on the premises an obstructed drain.—At *Pottery Bank*, where the disease was prevalent, are several wet open privy middens made of brick, and uncemented. The seats of the privies are so placed that the soil remains uncovered by any ashes thrown into the midden. These conveniences are near the house-doors, and are very offensive. They were reported last year, but the ashpit drains only were then cleansed. In many of the houses in the row, the bedrooms are "well-rooms" and the staircase is very narrow, ill-ventilated, dark, and placed at a right angle to the house passage. Many of the yards are paved with brick.—At Alma Terrace and Tyne Terrace several of the middens are similar to the above, and in the latter they are within three yards of the windows. At one house, where the nuisance from the midden was complained of, there were five cases of Scarlet Fever (one fatal).

ACTION TAKEN

(In addition to disinfection of premises, bedding, &c.)

Drain of tavern relaid, sinks disconnected.

Yards cemented.

Privies reconstructed.

Ashpits drained.

(d.)—Infectious Disease and Workshops, &c., &c.—The following have been reported to the Committee:—A child suffering from Scarlet Fever at Ingham Place, Shieldfield, father, *a tailor*, found at work in the house.—Four cases of Scarlet Fever in an *old clothes shop* in Buckingham Street.—Five cases of Scarlet Fever (one fatal), at a *tavern* in Mill Lane, where there was also a defectively trapped drain. A case of Scarlet Fever in the house of a keeper of a *public mangle* in Seaham Street (mangling done in room where patient lay).—Two cases of Scarlet Fever, under private medical treatment, in the family of a *muffin maker*, residing at Hedley Terrace. The sick children lay in the kitchen on the ground floor; the bakehouse, to which the father and others of the family passed directly from the kitchen, is in the yard behind.

Business prohibited during infection.

Clothes, &c., disinfected in stove.

Cases treated in upstairs rooms by private Medical Attendant.

Drain trapped.

Business prohibited.

Children removed upstairs. Kitchen disinfected. Precaution enjoined.

Concerning the foregoing cases of infectious disease in workshops and places of business, it is to be observed that there was no guarantee that instructions given as to the prevention of spread of infection would be carried out.

(*e.*)—*Infectious Diseases and Schools.*—Measles was found in February to be prevalent in several families, children from which attended the same school. The parents of some of the children attributed the illness to infection caught at school. On the other hand, the principal stated that there was often difficulty in preventing children from coming to school from infected houses.

ACTION TAKEN
(In addition to disinfection of premises, bedding, &c.)

Parents and School Principal cautioned.

Various other cases of infectious disease in connection with elementary and other schools have come under observation.—In a family in Durham Street, affected with Scarlet Fever in November, one of the healthy children, who had been kept at home on account of infection, was allowed to return to school before the termination of the case, owing, as was stated, to the recommendation of the *School Mistress.*—During the latter part of the year, owing to the occurrence of several cases of *Scarlet Fever* in the two schools of the Corporation, special attention was for some time given to those institutions. The following report was made thereon :—

The parents were cautioned. The schoolmistress was written to, but did not reply.

TO MR. ALD. ANGUS, CHAIRMAN OF THE SCHOOLS AND CHARITIES COMMITTEE.

DEAR SIR,—I beg to submit to you the following Report as to the health of the patients at the Royal Grammar and St. Mary's Boy's Schools, to which, in accordance with your request, I have acted as Medical Superintendent *pro tempore* from the middle of October last till the Christmas vacation.

Royal Grammar School.—From 17th October to 17th November, 11 pupils have been absent, suffering from Scarlet Fever, and seven have been prohibited from attending, on account of the occurrence of the disease in their families. None of the cases are known to have been fatal. Of the boys ill in person, one was in the 4th class, six were in the 5th, and four in the 6th. The percentage of these, to the numbers in the different classes, is :—

4th class	2 %
5th ,,	11 %
6th ,,	10 %

As regards the residence of the pupils attacked, seven live in Newcastle, two in Gateshead, one at the Felling, and one at Jarrow. It is probable that infection was communicated to the pupils (perhaps repeatedly) from without, as, on investigation, I found in several cases that the disease had been prevalent in the neighbourhood of their homes before they themselves were affected. After introduction in this way, the disease would doubtless spread by contact, as appears by the brunt of it having been borne by the 5th and 6th classes, which are held in rooms adjoining and opening into each other.

Since the 17th November no fresh case has occurred. Prior to my taking duty there had been two fatal cases.

The attendance of the pupils has been much reduced by the prevalence of infectious sore throat, of which 53 cases or 22 per cent. of the entire number of pupils occurred between October 17th and the Christmas vacation. The incidence of the complaint on the different classes was as follows :—

Class.	Cases.	Percentage
1st	3	14
2nd	2	9
3rd	7	14
4th	11	20
5th	21	38
6th	9	23
	53	

It will be observed that the percentage is here also highest in the 5th and 6th classes.

St. Mary's Boys' School.—Ten boys have been absent on account of Scarlet Fever during the period under Report, viz. :—three suffering in person and seven from the prevalence of the disease in their family. The three sick pupils recovered. Prior to the period to which this Report refers, one pupil died from Scarlet Fever of malignant form.

Infectious sore throat has also prevailed to a considerable extent among the pupils of this school, 44 boys or 11 per cent. of the total having been affected. The proportion of cases in the different classes is as follows:—

Class.	No. of Cases.	Percentage.
1st	2	5½
2nd	2	7
3rd	7	11
4th	9	15
5th	6	11
6th	2	4¾
7th	3	7
8th	10	21
9th	3	11

ACTION TAKEN.—The schools have been visited by me every morning whilst open. Boys found to be suffering from sore throat, or other infectious ailment, have been sent home. Reported cases of infectious disease, either among pupils or their families, have been carefully investigated. Parents have been instructed as to the best means of preventing the spread of contagion ; and in the majority of instances the premises, bedding, &c., have been disinfected by the Corporation. No pupil has been allowed to return to school unless free from all risk of communicating infection. On different occasions boys presenting themselves after illness, have been sent back as being unfit for re-admission, or because satisfactory evidence of disinfection was not produced. The class rooms were thoroughly fumigated with burning sulphur.

Recommendation.—To prevent the re-introduction of infection into the Grammar School, at any future time, it is desirable that every pupil before admission or re-admission should produce a written certificate from his parents that he has not suffered from any infectious disease nor been in contact with any one so suffering, for a period of at least one month before the date of his admission or proposed return to school.

NOTE.—The ailment above referred to as sore throat is one the importance of which, on the subsequent health of the children, is probably under-estimated, as, from what can be gathered, its prevalence in schools during cold weather would appear to be a matter of common occurrence. In all of the numerous cases under observation there has been, in addition to the ordinary soreness of the throat, inflammation of one or both tonsils, with enlargement of the glands, which latter remains after the active symptoms have subsided, and in many cases will doubtless have a permanent effect for ill on the constitution. The complaint, though not generally very severe, sometimes is so. It is infectious, as is shown by its greater relative prevalence in certain class rooms opening into each other, and by its affecting in succession, several members of a family. Under these circumstances it will readily be understood how pupils at the same desk may communicate the complaint to each other ; and why, to prevent this, it was necessary to prohibit the attendance of the infected at school.

I am, dear Sir,
Yours obediently,
HENRY E. ARMSTRONG,
Medical Officer of Health.

Town Hall, Newcastle-on-Tyne,
20th January, 1880.

ACTION TAKEN
(In addition to disinfection of premises, bedding, &c.)

With the view of receiving fuller information of infectious disease, the School Board were requested and at once agreed, to allow their officers to forward to the Health Department, on post cards supplied for the purpose, early notice of cases coming under their observation.

Early in the year a circular on the prevention of infectious diseases in schools was, with the sanction of the Committee, addressed to the principals of the different schools in the borough. (See Appendix II., p. 71.)

(f.)—Infectious Disease in insanitary Houses.—Among the cases of Zymotic disease on which the Sanitary Committee have been advised may be recorded the following :—

ENTERIC FEVER.

Three cases in a cottage in Erick Street in a sleeping and living room directly in communication with a large stable by means of a door in the wall. The room had an offensive smell, and was also dirty, damp, dilapidated, and unfit for habitation. The family consists of eight persons in all. The patients refused to go to Hospital. A magistrate's order for their removal under Sect. 124 of the Public Health Act, 1875, was obtained, but, owing to the objection of the police to assist, through fear of infection, this was of no use. Every other available means to procure the removal of the cases was tried but without effect. Some arrangement is needed by which any future order given by a justice in a similar case may not be a dead letter. Partly with the object of meeting the difficulty, it was recommended that the Committee consider the propriety of taking steps to have the Inspectors of Common Lodging Houses transferred from the Police to the Sanitary Department.—Three cases (one fatal) in a family in Hamilton Street. The Water Company's pipes are laid to the house, but, owing to frost, there had been no supply for seven weeks before the children took ill. The family used impure water from an open drain in a field, and shortly afterwards the children took ill.—Three cases in one family in Blagdon Street. The roof of the house is defective, and the stair is dark and ill-ventilated. The rooms are small and dingy. There was a foul brick drain and an open midden with privies below the windows in the yard, which is narrow and much enclosed.—Five cases in one family in Elizabeth Street, Byker. There was a defective privy and a wet open midden in the yard, which is small; also a defectively drained, close, overcrowded cow-byre in the next yard. The drainage and privy accommodation of the adjoining houses are defective.—A case at St. Ann's Street. The water-supply of this house had been cut off. The tenant complained that prior to midsummer the water was off for about seven consecutive months. There are no coal-houses for the property, and the ashes are of necessity kept on the landings.—A case at Portland Road. The lavatory and bath waste pipes (indoor) joined the soil pipes. The trap of the scullery sink was defective.

Action Taken
(In addition to disinfection of premises, bedding, &c.)

Notice served for room to be closed.

Door leading to stable closed and roof repaired.

Cases removed to hospital.

Roofs repaired. Drains relaid and trapped.

Privy seat raised.

Earthenware gully trap put in.

Water-supply provided.

Yard cleaned.

Waste-pipes disconnected and made to discharge over sink stone outside.

Scarlet Fever.

Three deaths (malignant) and three other cases of sickness in one house in Douglass Terrace, the entire family being affected. The first notice received of this outbreak was that sent to the Health Department by the Registrar of Deaths. On entering the passage a close, sickly smell was noticed; this was still more offensive in the room occupied by the survivors. It was stated that the window of this room had not been opened for upwards of a fortnight—not even after the death of one of the children. There was no history of infection. In the scullery was found a sink with a broken drain-pipe, through which sewer gas could enter freely into the house.—A fatal case (malignant), reported to have died after fifteen hours' illness, in Park Road. The water-closet, which is in the interior of the building, was found to have an unventilated soil-pipe. The bath waste, which joined the soil-pipe, served as a means for the introduction of sewer gas into the house. The kitchen sink was also untrapped, and the drain leading therefrom was defective.—Another fatal case (malignant) in Park Road. Infection appears to have been introduced by a servant in whose home the disease had been prevalent. The case was probably rendered malignant by the defective sanitary condition of the house. The bath, lavatory, and water-closet are in the same room, and the two former appeared to join the soil-pipe directly and without trapping; the cistern-waste and several "saveall-trays" did the same. There was found to be a slit of about three inches in length in the course of the cistern waste-pipe from the giving way of the soldering, the pipe being a "seamed" one. By the defective waste-pipe both the air of the room and the water in the cistern are exposed to contamination from sewer-gas. There is only one cistern for the closet and domestic use. It was recommended that steps be at once taken to alter them as follows:—To disconnect all the waste pipes and sinks from the soil-pipe, and to cause them to discharge over and at a distance of 18 inches from a properly trapped sink stone in the yard, and to secure efficient ventilation of the drain by two openings, viz.: one grated opening near the lower end of the drain separated from the sewer by a proper trap; and a second opening at the upper extremity of a full bore continuation upwards of the soil-pipe, the open end to terminate in such a position as to permit of the safe discharge of noxious gases.—Two cases (both fatal) in a house in Gloucester Road. The interior sink had a direct communication with the drain.—A case (malignant), fatal in three days, in a house in Tynemouth Road, Byker. Cellar wall damp from sewage, and a very offensive smell in the living rooms.—A case at Chester Crescent. The wastes of baths, lavatories, and water-closets were connected. The sinks in kitchen and scullery were defective, as was the drain.—A case in Crown Street. Wastes from

ACTION TAKEN
(In addition to disinfection of premises, bedding, &c.)

Sink disconnected and made to discharge over trapped gully grate in yard.

Same as in preceding.
Soil pipe ventilated.

Bath and lavatory disconnected.
Soil pipe carried through main wall and ventilated.

Sink waste disconnected and made to discharge over trapped gully grate in open air.

House vacated by tenant & closed.

Pipes disconnected and made to discharge over trapped gully.

bath, and safe-tray join soil-pipe.—Two cases in one family in Malvern Street. The kitchen sink is defective. The wastes from the bath and lavatory are joined to the soil-pipe, and the water-closet is defective. The defects in this case have been pointed out to the tenant, that he may arrange with the landlord.—Two deaths in a family—father and daughter—at No. 13, Pitt Street. The disease was very severe and ran a short course (four days in each case). The family occupied a tenement of two very small rooms, one of which is a "well-room." The defective ventilation of this house and the staircase belonging to it was described in the Annual Report for 1878, during which year a child of the same family died from Scarlet Fever after seven hours' illness. There is no doubt that on the present occasion the illness and death of the father was attributable to infection from the daughter, which, owing to the smallness of the room and want of ventilation, would become concentrated and malignant to an exceptional degree. The adjoining rooms in the house were in the same condition as those occupied by the deceased. It was strongly recommended that steps should be taken to provide efficient ventilation for these and all other "well-rooms," which are very common in this and other parts of the Borough, or, failing this, to close the rooms, which in their present condition are, in the opinion of the Medical Officer of Health, *unfit for human habitation.*

ACTION TAKEN

(In addition to disinsection of premises, bedding, &c.)

Defects remedied as in foregoing cases.

An efficient system of ventilation of the house was carried out, and the lighting of the stair was improved. The Committee have since instructed that other "well-rooms" shall be treated in the same manner, which is being done.

MEASLES

in Spring assumed an epidemic form in the Borough. Judging from the returns of cases in Dispensary practice, which, with the return of deaths, form almost the only sources of information available to the Health Department, the outbreak attained considerable magnitude in all parts of the town except the west. There can be little doubt that the spread of the disease was largely due to contagion, through the indifference or ignorance of the parents of sick children, who allow intercourse between the infected and others, and frequently let children attend school whilst the disease is in their houses. To deal properly with this or any epidemic disease a system of *Compulsory and Early Registration* of all cases is necessary. It is much to be desired that action be taken to obtain power for this in the next parliamentary Bill for the Borough. Such power has been obtained by several towns in England and Scotland.

DIPHTHERIA.

ACTION TAKEN

Seven cases (one fatal) in a family in Park Road. The sanitary arrangements and house drainage were found to be grossly defective. On the ground floor the scullery sink was covered by a bell-trap only, and, below this, was in direct communication with the sewer. The pan of the water-closet in the yard was broken. The interior water-closet, a bath, and a lavatory are placed in a room which opens directly into a bedroom in which some of the cases of sickness were. The closet was defective—water could scarcely be got to flow into the pan. The pan had been repaired by putty. Neither the trunk of the water-closet or the soil-pipe was ventilated. The waste pipes of bath and lavatory appeared to join the soil-pipe untrapped. Offensive smells have often been complained of. For remedy, the kitchen sink should be altered in position and made to discharge over a slop-stone in the yard; the yard closet should be repaired; the soil-pipe of the interior water-closet should be ventilated by a full-bore continuation to above the roof. The trunk of the closet should also be freely ventilated by a double tube communicating with the external air. The pan should be properly repaired or renewed; the bath and lavatory should be made to discharge over a sink-stone in the yard.

House vacated. Tenant still retains possession.

With the approval of the Sanitary Committee and the Medical Profession of Newcastle, a circular* of instructions for the prevention of the spread of infectious diseases in houses, and addressed to heads of families and others, was printed for general use. A copy is left at every house in which infectious disease comes under the notice of the Health Department, and others may be had on application.

(g.) — *Tenements vacated after Fever, and re-let without disinfection.*—Two tenements of one room each at New Road.

Tenements disinfected by Inspector.

(h.)—*Disinfection after Fever declined.*—At the house of a fatal case of Scarlet Fever, the offer of the Inspector to disinfect the premises and remove the bed to the disinfecting apparatus was declined. The tenant said she would do these things herself. She was unable to disinfect the bed properly, as this can only be done in a stove such as that provided for the purpose by the sanitary authority.

Legal proceedings threatened. Bedding afterwards allowed to be removed to Disinfecting apparatus and purified.

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* Adopted, with some slight modification, from the recommendation of the Society of Medical Officers of Health. See Appendix III., page 72.

(2.)—HOUSE PROPERTY IN BLOCK.

ACTION TAKEN

(*a.*)—*Hall's Court, Newgate Street.*—Reported on for defective paving, drainage, insufficient and defective closet accommodation; privy immediately beneath a bed-room window; midden against wall of kitchen and pantry, and soaking through; damp house.

Additional closets provided. Privy and midden replaced by water-closet. Drain relaid and properly trapped. Defective water-closet repaired. Yard paved.

(*b.*)—*Back Villa Place.*—The refuse of numerous middens is, prior to removal, emptied on the street, which is very narrow. The first floor tenants have no access to their houses except by this street way, which is impassable whilst the midden refuse is lying there. The yards are small, and the middens are within a very short distance of the doors and windows. It was recommended that the ash-closet system be adopted for this street. There have been several cases of Scarlet Fever in the street. At the back of the north side of Villa Place the sewer is constructed of brick and very shallow. As water-closets are about to be re-constructed for the use of several tenants, it was recommended that the condition of the drain be examined into, with the view of ascertaining its fitness for the transmission of water-closet refuse.

Privies reconstructed. Ashpits drained. Yard drains relaid and gully traps provided.

Sewer about to be relaid with glazed pipes.

(*c.*) — *Stowell Street.* — (Previously reported in February, 1878.) The back rooms of several of the houses on the *north-west side of Stowell Street* are in a very insanitary condition from darkness, dampness, and close proximity to privies and open middens. Many of the rooms are let singly as tenements, and are boarded up to conceal the wetness of the walls. In several of the yards the privy abuts on the wall of the room, the only window of which is about five feet from the midden. The drainage of the yard of No. 30 is defective.

Work now being proceeded with.

(3.) – SANITARY DEFECTS OF OTHER PROPERTY.

The following, among other cases, have been specially referred to :—

(*a.*)—*Water supply at Conyers Road, Byker.*—Complaint having been made of the insufficient and intermittent supply of water to the houses of Conyers Road, Byker, the Medical Officer of Health wrote on the subject to the Secretary of the Water Company, who at once gave instructions for fuller and constant supply to be laid on, by alterations of the pipes, which was done. No complaints has since been received.

Water-supply augmented by means of additional pipe.

(*b.*)—*Wall-Papers* (*Arsenical.*)—Two samples of wall-paper have been forwarded to and reported on by the Borough Analyst as containing respectively 0·64 grain and 0·45 grain of arsenic per square foot. In the former instance different members of the family had suffered from symptoms somewhat resembling those of arsenical poisoning, but the medical attendant did not consider the cases under his care to be caused by that poison. In the latter, the paper had been on the wall of a bed-room for some years, and was not known to have produced any ill effect.

ACTION TAKEN

Paper stripped from wall. Paperhanger written to.

(*c.*)—*Insanitary Yards reported on.*—No. 110, Newgate Street: From accumulation of foul water, obstructed drain and water-closet, deposit of night soil, etc., defective ventilation of yard. Rooms dark, damp, and unfit for habitation.—Steel's Yard, Byker Bank, in a foul condition from defective paving, deposit of ashes and refuse, filthy ash-closets; an occupied room, damp, and unfit for habitation.—Goldburn's Yard, Newgate Street, in a dilapidated and very insanitary state. All the rooms on the ground floor are dark, and several are very damp and unfit for habitation.—Phœnix Yard, New Pandon Street: there is one closet only for a very large number of tenants. This property is to be dealt with under the Artizans' Dwellings Act. As it will probably be some time before the tenants are displaced for the demolition of the buildings, it is desirable that arrangements be made for additional closet accommodation.—Percy Court, Percy Street (second report): nuisance from ashpit, nine feet from a house door; midden at higher part of court defective and soaking through wall of a house; untrapped drain grates.—Bakehouse Entry, No. 8, Long Stairs: Offensive closets beneath living room (reported in 1878, and still continuing). Drain trap defective; refuse deposited.

Deposit, etc., removed; water-closet repaired.

Yard cemented.

Closets and deposits attended to

Plans passed for new buildings. One of the tenements has been closed, and others boarded up to *conceal* the damp.

Ordered to be attended to.

Drains relaid and trapped. Midden and ashpit not remedied.

(4.)—REFUSE REMOVAL.

Refuse removal was reported on in July, as follows:—

> "It will readily be understood that the spread of Fever and other infectious disease may be directly due to the turning over and exposure afterwards of infected excreta from privies or middens, and also by the carting of the same, uncovered through the streets. To avoid this the Committee are strongly recommended to adopt wherever practicable some form of closet in lieu of privies and middens; and where ash-closets are approved, to provide a duplicate set of pans with tight-fitting covers—such as are

in use in several towns, and have before been recommended for this Borough. This plan would not require more pans in duplicate than would fill the different vans for carrying them; and would allow of each being thoroughly cleansed before its return, which is not done at present. If proper levers were provided to lift the pans into and out of the vans, a great amount of labour would be saved."

The more copious use of chloride of lime after the removal of house and privy refuse was also recommended. It is desirable that steps be taken to prevent the emptying of manure-pits and the removal of manure from cow-byres, stables, etc., in open-air carts during hours of business. This is frequently done in the middle of the day, and is a nuisance.

Reported on as having been attended to.

(5.)—OFFENSIVE DEPOSITS, OLD QUARRIES, ETC.

Mud, road scrapings, manure, and vegetable matter were reported in April as continuing to be deposited in large quantities at the old quarries, Campbell Street; somewhat similar deposits also were made at the old quarries near Douglass Terrace and Bell Street, Arthur's Hill. (See previous Annual Reports.) Similar deposits were complained of as having been made near Eskdale Terrace, Jesmond.

Deposits reported as having been removed.

(6.)—REMOVAL OF UNBURIED BODIES TO DEAD-HOUSE.

During the past year nine bodies have been removed to the Dead-house by the Sanitary Authority on account of Relieving Officers declining to give orders for interment unless this were previously done. As the course pursued involves certain irregularities which have previously been referred to, it appears desirable to give a short account of it. To prevent the burial at the expense of the Poor-Law Authority of persons not absolutely paupers the Relieving Officers, when applied to for an order for interment, decline to give it unless the friends of the deceased, to prove their pauperism, will first submit to have the body removed to the mortuary, which is sometimes a mile or more distant. If this is consented to there is still delay. The Relieving Officer having no legal power to remove bodies to a mortuary, applies to the Sanitary Authority to do this, at their own expense, under Sect. 142 of the Public Health Act, 1875. The Sanitary Authority then instruct an undertaker to remove the body. The friends or neighbours of the deceased sometimes refuse at the last to allow this, and subscriptions are not unfrequently raised to defray the funeral expenses. If there be no obstruction, as sometimes happens, and the removal takes place, a Justice's order for interment is then to be made, and finally the body is buried. This expenditure of time and money by the Sanitary Authority, and the delay of interment involved in these different steps, is incurred solely in order that the Relieving Officer may provide himself with power, under the section already referred to, to recover his own expenses in a summary manner from any person legally liable to pay them. Although most of the bodies thus dealt with have been such as did not strictly come within the meaning of the section, not being those of persons dead from "any infectious disease retained in a room in which persons live or sleep," or "in such a state as to endanger the health of the inmates," the Sanitary Committee have hitherto allowed the course above described to be carried out at an outlay to themselves equal to perhaps three-quarters of that which the Relieving Officer would have saved the Poor-Law Authority had he recovered the burial expenses in all the cases, which he probably did not do.

(7.)—DAIRIES AND COWSHEDS.

(*a.*)—*Defective Cowsheds.*—Since the general inspection of cowhouses and dairies in the Borough on which the special report,* submitted to the Committee, was based, the condition of these places is but little improved. At Spital Tongues there are several recently-erected cowhouses, which are in an insanitary condition. The flooring is made of brick, and is already loose in places. There is no water-supply to some of the cowhouses. The drains lead into the interior of the buildings, and are defectively trapped. In at least one case the milk vessels are kept in the cowhouse, there being no dairy. The middens are built of brick, uncemented, and the wall of one is already partly broken down.

Water-supply provided. Drains disconnected and made to discharge over trapped grates outside. Yard cemented.

(*b.*)—*Infectious Disease in the Houses of Dairy Keepers.*—The families of four dairy-keepers resident in the Borough are known to have been affected with Zymotic disease, viz.:—(1) A case of Scarlet Fever in Wellington Terrace in May. The cowshed was situated at a distance (Chimney Mills), and the attendants on the sick child were in no way engaged in the milk business. (2) A case of Measles at Back Hammond Street, where the arrangements were similar to the foregoing. (3) Two cases (one fatal)

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* Summarised in the Annual Report for 1877.

ACTION TAKEN

of Scarlet Fever at Sallyport in October; the dairy-keeper in this instance undertook to engage a person to attend to the business. (4) Three cases of Scarlet Fever at Cambridge Street in November. Milk intended for sale was found in the house, and it was admitted that the milk vessels were washed in the house. The drains were also defective.

Precaution enjoined to prevent infection of milk.

Drains relaid.

In all the above, the cases were as far as possible kept under surveillance with the view of ascertaining that the precautions enjoined were acted on. It will be apparent, however, that no sanitary staff can keep up a constant supervision over establishments of this kind, and there is no guarantee that dairymen will keep promises, the fulfilment of which involves expense and interference with their business. In the last of the above cases there is reason to suspect that the instructions given by the Health Department were disregarded.

(c.)—Unwholesome Milk.—Owing to complaints of the milk sold to consumers, different samples were examined by the Medical Officer of Health, and found to give off a sickly and offensive smell, especially when heated. Microscopic examination showed that the samples consisted, at least in part, of the yield of recently calved cows. As such milk is purgative in action as well as disagreeable to taste, and continues to have these characters for several days after the calving of the cow, the sale of it (during the first week) should be prohibited under penalty.

(d.)—Regulations for Dairies, Cowsheds, and Milkshops.—In February the Medical Officer of Health obtained the sanction of the Sanitary Committee to prepare a set of Regulations under the Dairies, Cowsheds, and Milkshops Order of the 4th of the same month. The proposed regulations were approved by a Sub-Committee appointed to consider them, but were afterwards greatly reduced in number and force by the late Town Clerk, partly on the ground that certain interpretation clauses introduced for the purpose of defining more precisely the meaning of the words "reasonable satisfaction"* in the Order, were inadmis-

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* The clause in the Order dated July 9th, reads as follows :—"5. (1.)—It shall not be lawful for any person following the trade of dairyman to begin to occupy as a dairy or cow-shed, any building not so occupied at the making of this Order, unless, and until he first makes provision to the reasonable satisfaction of the Local Authority for the lighting and the ventilation, including air space and the cleansing, drainage, and water-supply of the same, while occupied as a dairy or cowshed. (2.)—It shall not be lawful for any person to begin so to occupy any such building without first giving one month's notice in writing to the Local Authority of his intention so to do."

sible as regulations. The Committee ultimately resolved to print a set of regulations as approved by the late Town Clerk, and to draw up a separate list of instructions bearing on the term "reasonable satisfaction," for the guidance of the Inspector under the Order.

ACTION TAKEN ETC.

(8.)—DISCONNECTION OF HOUSE DRAINS, ETC.

Owing to the defective sanitary condition of very many of the houses in the Borough, from direct communication between the interiors and the sewers, and the liability to contamination of drinking water with sewer air through cistern waste pipes, the Committee instructed the Borough Engineer and Medical Officer of Health to prepare and submit a list of recommendations for the guidance of owners of house-property, builders, householders, etc., showing the most approved mode of remedying the before-named evils in existing houses, and avoiding them in houses to be built hereafter.

Recommendations with sketch prepared, and now under consideration of Sanitary Committee.

(9.)—GENERAL WORK OF THE SANITARY STAFF.

(a.)—Nuisance Removal.—The number of nuisance cases dealt with by the Inspectors is considerably in excess of that of the preceding year. A total of 4,042 cases being reported as compared with 2,985 in 1878. This increase is general in all of the different parishes or townships of the Borough, notwithstanding that the work of disinfection, which is done by the same officers, has been doubled, owing to the epidemics of Scarlet Fever and Measles.

Appendix I., Table XVII.

(b.)—Disinfection.—925 cases of infectious disease* in various parts of the Borough have been disinfected and otherwise treated. The work done by the disinfecting apparatus is also much greater than last year. There appears to be less prejudice than formerly against the removal of articles to the stove. The inspectors are desired to continue to carry out energetically the thorough purification of all infected houses and premises, and, wherever practicable, to see that bedding and other articles which cannot be effectually disinfected on the premises are removed to the stove provided by the Corporation.

Appendix I., Table XVI.

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* Consisting chiefly of cases in Dispensary practice and deaths returned by the Registrars.

(10.)—Unwholesome Provisions.

Action Taken

Appendix I., Table XIV.

The provisions destroyed as unfit for food this year consist entirely of animal produce. Owing to the coldness of the summer and autumn seasons the fruit and vegetables have not been so liable to spoil. The amount of flesh-meat destroyed is below that of the previous year. No summonses for unsound meat have been issued during the year.

On one occasion (in June) some of the American beef brought to the Dead Meat Market was found to be defective, probably on account of temporary interference with the usual conditions of preparation of the meat prior to shipment. Several quarters of the meat were becoming green in places; this change was limited to the surface, the remainder of the meat being in tolerable condition. None of the meat was in such a state as to justify seizure. In reference to this subject it may be noted that in flesh submitted to a refrigerating process immediately after the slaughter of the animal, the changes of decomposition appear to be confined to the surface for a much longer time than in the case of flesh not so treated.

Auctioneer cautioned. Meat withdrawn from market.

(11.)—Examination of Building Plans.

Since July, in accordance with a resolution passed by the Town Improvement Committee on the recommendation of the Sanitary Committee, the Medical Officer of Health has examined all plans for proposed new buildings with regard to sanitary requirements, and has initialed those that were approved.

(12.)—Bye-laws.

In July the Chairman of the Bye-laws Committee was advised by the Medical Officer of Health as to sanitary clauses in the bye-laws then under consideration. The clauses recommended for adoption were in chief part extracts from or modifications of the model bye-laws recently issued by the Local Government Board.

(C.)—OBSERVATIONS.

Ill-defined causes of death.—During the year, 111 of the deaths, owing to the vagueness of the wording of the certificates, have been unavoidably placed under the head of "Causes not specified or ill-defined." As a large proportion of these are cases certified to by legally qualified practitioners, it is desirable to draw the attention of the medical profession to the necessity of greater precision in this respect. It is not only for a local or temporary purpose, (although this of itself is a sufficient reason for desiring strict accuracy in the wording of certificates), that statistics of mortality are valuable. Such returns are of national importance, since on them are based all the computations relating to the life and mortality of the people at large.

INFECTIOUS DISEASE, THE CAUSES OF ITS SPREAD, AND THE POSSIBILITY OF ITS EXTINCTION.

As the chief indication for action on the part of sanitary authorities is the presence of zymotic sickness, which may in some condition or other be said to be always with us, it appears desirable to endeavour to obtain a clear understanding of the circumstances on which the continued existence of this monster of protean form depends, and the agencies by which it is capable of control, or through which its ultimate annihilation may reasonably be hoped for.

The consideration of these subjects by thinkers in all classes is in the highest degree important, since public opinion must be influenced in regard to them, before those vigorous measures can be put in operation by which and by which alone the stamping out of human communicable disease is to be effected.

The following extracts from one of a series of lectures* may be accepted as a reflex of modern scientific opinion. After stating the universal tendency of all infectious diseases to increase at a geometrical ratio, and showing by diagrams that at the most moderate ratio of two, that is to say, to suppose that each case produces two other cases, in seven weeks one case of Scarlet Fever for instance, may give rise to 256 cases—the writer referring to the difference of effect on the public mind caused by different infectious diseases goes on to state :—

> "Before an infectious disease has attained sufficient epidemic prevalence to attract public attention, it has usually gone far beyond the stage in its geometrical progression depicted in the diagrams. * * * * The degree of fatality of the

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* On the Theory and General Prevention and Control of Infectious Diseases, 1879, by James B. Russell, B.A., M.D., Medical Officer of Health, Glasgow, delivered under the auspices of, and published by the Lord Provost, Magistrates, and Council of the City of Glasgow.

special disease to a large extent determines the precise point at which alarm is raised. Such a fatal affection as Cholera causes immediate excitement. The half of those attacked during the whole course of an epidemic die, but at the outset the mortality is much higher, therefore the very name of cholera causes apprehension. But in the case of other diseases, the deaths do not accumulate nearly so quickly, so that alarm is not taken until they have been for some time progressing quietly and unobserved. Therefore the popular point of view of an epidemic is the reverse of the scientific. * * * * The popular aspect of an epidemic is bewildered and confused. The threads of connection of case with case are inextricably entangled and practically lost. There are hundreds or thousands of sick people, and the effect is so universal that the public lose their grasp of, and confidence in the sufficiency of the cause to which science or intelligent knowledge firmly adheres. It is then we hear of epidemic constitutions, pandemic waves, and all those mysterious and unprofitable conceptions which are begotten of ignorance and terror in the human mind. The scientific aspect not only inspires hope and confidence, but imparts precision and effectiveness to our action. Superstition aims its blows t ghosts and phantoms, but science lays its axe to the substantial root of the epidemic growth. To abandon metaphor and speak plainly, no matter at what stage of this geometrical progression the disease in hand may be, it is against the individual case, the units of the disease, we must direct those measures of destruction which will cut short this progression. Each case in the series of hundreds or thousands possesses the same power of progression as the one at the very beginning of the series. Sooner or later this power of progression will, even without artificial interference or control, by simple exhaustion of the susceptible persons in the population, taper off and finally die out in a descending series, ending as it began—in one. But by interference on well ascertained principles we may precipitate this natural event, and it is equally certain that by the timely exercise of this interference directed to the primary cases, we may make the growth of the epidemic impossible."

The following is from the writings of one of the greatest living authorities* in sanitary science :—

"It needs hardly be said that exact scientific knowledge of the contagia, and of their respective modes of operation, is of supreme importance to the prevention of disease. With even such knowledge of them as already exists, diseases which have in past times been most murderous of mankind and the domestic animals can, if the knowledge be duly applied, be kept comparatively or absolutely in subjection ; and the fact that at the present time fully a fifth part of the annual mortality of the population of England is due to epidemics of contagious disease, is only because of the very imperfect application hitherto made of that knowledge. * * * It is not necessary to state in detail the practice which ought to be adopted in the various different cases of infectious disease ; but briefly it may be said that one principle is at the root of all such practice, whatever the disease to which it relates. This principle, which of course becomes more and more important in proportion as the infection is dangerous, and as the persons whom it would endanger are many, is the principle of thoroughly effective separation between the sick and the healthy, a separation which, so far as the nature of the disease requires, must regard not only the personal presence of the sick, but equally all the various ways, direct and indirect, by which infective matters from that presence may pass into operation on others."

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*An Essay on "Contagion, its Nature, and Mode of Action," November, 1879, by John Simon, C.B., F.R.S., late Medical Officer to the Privy Council.

The writer, after naming the social conditions through which, in our own country at the present time, infections are chiefly spread, continues :—

" Of the dangers here enumerated, there is perhaps none against which the law of England does not purport in some degree to provide. At present, however, they all are, to an immense extent, left in uncontrolled operation; partly because the law is inadequate, and partly because local administrators of the law often give little care to the matter; but chiefly because that strong influence of national opinion which controls both law and administration, cannot really be effective until the time when right knowledge of the subject shall be generally distributed among the people, and when the masses whom epidemics affect shall appreciate their own great interest in preventing them.

Whenever that time shall come, probably the public good will be seen to require, with regard to every serious infectious disease which is apt to become epidemic, that the principles which ought to be accepted in a really practical sense, and to be embodied in effective law, are somewhat as follows:—(1) That each case of such disease is a public danger, against which the public, as represented by its local Sanitary Authorities, is entitled to be warned by proper information; (2) that every man who in his own person, or in that of any one under his charge, is the subject of such disease, or is in control of circumstances relating to it, is, in common duty towards his neighbours, bound to take every care which he can against the spreading of the infection: that, so far as he would not of his own accord do this duty, his neighbours ought to have ample and ready means of compelling him; and that he should be responsible for giving to the Local Sanitary Authority proper notification of his case, in order that the authority may, as far as needful, satisfy itself as to the sufficiency of his precaution; (3) that so far as he may from ignorance not understand the scope of his precautionary duties, or may from poverty or other circumstances be unable to fulfil them, the common interest is to give him liberally out of the common stock such guidance and such effectual help as may be wanting; (4) that so far as he is voluntarily in default of his duty, he should not only be punishable by penalty as for an act of nuisance, but should be liable to pay pecuniary damages for whatever harm he occasions to others; (5) that the various commercial undertakings which in certain contingencies may be specially instrumental in the spreading of infection—water companies, dairies, laundries, boarding schools, lodging houses, inns, etc., should respectively be subject to special rule and visitation in regard of the special dangers which they may occasion; and that the persons in authority in them should be held to strict account for whatever injury may be caussd through neglect of rule; (6) that every Local Sanitary Authority should always have at command, for the use of its district, such hospital accommodation for the sick, such means for their conveyance, such mortuary, such disinfection establishments, and generally such planned arrangements and skilled service, as may, in case of need, suffice for all probable requirements of the district.

Persons who are imperfectly acquainted with the scientific and social facts relating to the present subject matter, or who have never seriously considered them, may think it would be over sanguine to expect any general recognition of principles so peremptory as the above may at first appear to them ; but, if so thinking, they perhaps have under-estimated the rapidity with which knowledge is now increasing as to the common interests and mutual duties of mankind in respect of dangerous infectious disease. Fourteen years ago, when the so-called cattle plague or steppe-murrain was imported afresh, as a long forgotten disease, into this country, and was found to effect very large pecuniary interests, primarily of the chief landowners of the United Kingdom, but secondarily of other classes, an immensely valuable stimulus was given to the education of the country, and especially of its legislature, in regard to the preventibility of the infectious diseases. And the remarkable zeal and ability which have been shown in providing adequate laws and admirable administrative arrangements against the diffusion of steppe-murrain and other infectious diseases of farm stock, are not likely to be found permanently absent in relation to the interest of human life, when once the true bearings of the subject shall have got to be popularly understood."

Of the principles enumerated in the last paragraph but one of the preceding quotation, that relating to the compulsory *registration of all cases of infectious sickness*, is one which has before been advocated in the pages of these reports. The need of it during last year was much felt in this borough, as *e.g.* in the investigation into the outbreak of Scarlet Fever in Westgate (page 16), at St. Anthony's (page 27), the Schools (page 28), etc.

The benefit of the efforts of the Sanitary Authority and staff has been greatly limited by the fact that the information of cases of infectious disease (except in Dispensary practice) seldom reaches the Health Department until too late for remedy; as, for instance, in the case of the entire family affected at Douglass Terrace, of whom three died (page 31). Had notice been forwarded at the commencement of the first of these cases, it is probable that the disconnection of the defective drain, together with the adoption of other sanitary measures, would have prevented the extension of infection. Further illustrations of the need of such cases being promptly notified to the Sanitary Authority are those of the dairies, tailors' workshops, old clothes-shop, public mangle-house, tavern, muffin-maker, mentioned under the head of ZYMOTIC DISEASES (page 27), in the present Report.

It is to be regretted that provision for the compulsory registration of infectious diseases in the families of milk-sellers was not made in the Cowsheds, Dairies, and Milkshops' Order of 1879.

The subject of the notification of disease is at present engaging the serious attention of Medical Officers of Health in all parts of the kingdom, among whom there is a widespread feeling in its favour. On their advice a considerable number of Sanitary Authorities, both in England and Scotland, have acquired the necessary Parliamentary powers by Local Acts.

The Health Officer of Glasgow, in the lecture already quoted from, observes:—

> "You see that epidemic expansions all centre in one case, and I have told you that every succeeding case is, or may become, a centre for a similar subsequent expansion. Consider what interest, therefore, all these subsequently infected persons have in the management of the original isolated case. What possible private interest can be urged in bar of the vast public interest which demands that this, that every single case, should be made known to the Local Authority, and by them supervised on behalf of their pre-eminent public interest? Indeed, in respect of infectious disease, there is no such thing as private, as distinct from public, interest. In the cycle of events we are all constantly changing places. To-day I am the victim of a communicable disease, and my neighbour is endangered; to-morrow my neighbour is the victim, and I am endangered. The distinction is a mere fiction. * * * * I wish, then, to prepare you for the compulsory registration of all cases of infectious disease by some enactment as complete and binding in its provisions as that by which you are now compelled to register your births, deaths, and marriages."

The idea of the registration of infectious disease is not confined to those professionally engaged in such matters, but has already occurred to others, after their personal interest has been affected, as appears by the following extract from a local newspaper,* which is interesting as an indication of opinion on the part of the laity:—

> "One of my sons has been laid up for weeks (Scarlet Fever) * * * * If all cases that occur were to be reported to the Sanitary Board of the district and means taken to isolate them, and see that the houses (and cases) were thoroughly disinfected * * * * before the children were allowed to return to school, a salutary check would be effected to prevent the spread of this most virulent of visitations. Cattle and sheep are carefully supervised. Why should not the lambs of the human race receive the same attention?"

But after having acquired, by legal right, an early knowledge of all communicable disease, if without means for enforcing the effectual and prolonged isolation of the infected, the guardians of the public health will find their powers inadequate to the performance of the duty imposed on them. They will find that in most instances the complete segregation of the sick in their own homes is impossible, either owing to structural arrangement of the building or the necessary requirements of domestic life, or both; and that in the few households where these impediments are not insuperable, such segregation is nevertheless unavailing unless the inmates are gifted with the rare combination of *intelligence* to appreciate the need of scrupulous attention to detail, *training* to carry such detail into effect; *firmness* to withstand remonstrance or entreaty against unavoidable interference with the intercourse between the patient and his friends; and *vigilance* to maintain unbroken from first to last, the absolute privacy of every infected person and thing, without which isolation is but a name.

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* *Newcastle Daily Chronicle*, 16th February, 1880.

If it be asked, should not the medical attendants on such cases deal with the isolation of them? The reply is that the ordinary medical adviser being in the service of the patient, and having also his attention fully occupied in the treatment of the case, is not the proper person on whom should rest the responsibility of protecting the public by interfering with the liberty or convenience of that patient. By the nature of things the medical attendant is placed under conditions which limit his independence and prevent his impartiality. He is not free to give a decision, for example, as to the fitness or unfitness of a dwelling house for the accommodation of a case of Fever, except in so far as regards its fitness for the treatment of the case itself; nor to determine the period of isolation to which such a case should be subjected. For the reasons indicated in this and the preceding paragraph, the thorough and continued separation of the infected from the uninfected is seldom properly carried out; nor is it likely ever so to be *until the Local Authority have compulsory power and undertake the duty on the public behalf.*

Compulsory isolation of the infected is no new idea. It was, by divine ordinance, rigidly enforced in the time of Moses against the leper, an infected person.* The re-adoption of it at the present day involves a great social change; but, if fairly tried, the undertaking will probably be found to be neither so difficult, so large, or so expensive as may at first glance be imagined; and the end will fully justify not only on moral but on financial grounds the means proposed, which are in brief as follow:—

(1.)—*The compulsory and early notification to the Local Authority of every case of infectious disease.*

(2.)—*Sufficient Hospital accommodation* for cases of infectious disease, admission to be free to the public wards, and at as low a rate as possible to the private ones.

(3.)—*Homes of refuge* for the accommodation of the poor whilst their own homes are being disinfected.

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* "All the days wherein the plague shall be in him he shall be defiled; he is unclean; he shall dwell alone; without the camp shall his habitation be."—Leviticus, xiii. 46.

(4.)—*Isolation houses* (home-hospitals) for the compulsory reception of all infectious cases not removed to the General Infectious Hospital, the patient providing his own medical attendant, who, during his visit to the home hospital, should wear special apparel, and, before leaving, use disinfectants for washing his hands, etc.

(5.)—In addition to the foregoing, and as necessary parts of the means for preventing infectious disease, each sanitary district should, as stated by Mr. Simon, be supplied with a fever ambulance, disinfecting stove, mortuary, etc., etc.

Arrangements should be made for the isolation, when desired, of relatives along with the patient. Relatives so admitted should not pass in and out of isolation except under precaution sanctioned by a competent independent judge. Patients under private treatment should remain in isolation until free from infection and until discharged by the Medical Officer of Health.

Such an arrangement as that here sketched out would be a great comfort and convenience to private families as well as a public boon. We might then expect to have no further experience of epidemics, outbreaks of Fever in connexion with milk-supply or other processes of trade or schools, and the difficulties and anxieties they entail would disappear; the incalculable expense to which the country is at present annually put in its vain struggle with infectious disease, would gradually dwindle down; the mortality from Fever and the diseases induced by Fever would be almost nil; and eventually the general health of the people, freed from the numerous zymotic disturbances to which in early life it is at present prone, would acquire a vigour now enjoyed by the few only whom accidental circumstance has placed beyond their effects.

The chief objection likely to be raised to the proposal—removal of children from the domestic roof – great though it undoubtedly is, should not be considered insuperable, since for other and less important purposes it is a matter of every day occurrence. The custom among the more wealthy classes of sending sons and daughters to boarding schools is almost universal. In this case the child not unfrequently goes to a great distance from home; among strangers; for half a year or more; and for his own good only: whereas, in a patient's removal to hospital he will not be required to go far from home; he need not be among strangers; he will have the family medical man to visit him; his absence will be merely a matter of weeks; the benefit to himself will probably be considerable, whilst the advantage to his relatives and the public generally will be incalculable.

If a universal and compulsory scheme of isolation were adopted, the most suitable mode of putting it in action would probably be found to be somewhat as follows :—

A Local Authority having provided itself, as above indicated, with all the machinery necessary for the prevention of epidemics, would find it expedient in the first instance to proceed against one disease only, say, Scarlet Fever. The different hospitals and isolation-houses throughout the district having been put in readiness to receive patients *at a time when this zymotic was absent,* the compulsory removal of all patients suffering from Scarlet Fever would commence with the next case of that disease. By these means the outbreak, and future ones of different kinds, might, one after another, be nipped in the bud. The amount of accommodation used would probably not be a twentieth part of that now annually required for the same purpose in the homes of the people.

Since the object in view is one of national importance, part at least of the expense of such a scheme, if carried out, would very properly fall upon the State.

Nor are the promises of success for such a scheme founded on mere speculation. Typhus Fever, a disease of the poor, which until a few years ago had long been endemic and fearfully prevalent in this town, is now seldom met with. Its subsidence dates from about six years ago. In the nine years ended and including 1873, the admissions to the Fever Hospital from that disease alone averaged 231 per annum. At the same time the cases treated at home by the Dispensary were probably equal to at least a third of this number.* In the six subsequent years, (1874–79 inclusive) the Typhus cases in Hospital have averaged only 31 per annum, or a reduction of 87 per cent. on those of the previous period, whilst those in Dispensary practice have averaged only 13 per annum. There has been therefore, during the second of these periods, a great diminution of this epidemic disease in the two Institutions whose practice fairly represents the extent of the disease in the Borough.* This result, which has taken place notwithstanding the frequent impossibility of prevailing on patients to consent to removal to Hospital, (but for which, beyond doubt, the cases would have been much fewer), is accounted for by the facts that prior to the end of the first period no person was responsible for the isolation of Fever cases, and that there was then no free admission to the Hospital. There was consequently at that time very little check to the spread of infection; whereas in 1873 the Sanitary Authority acquired the Fever Hospital, and appointed a Medical Officer of Health, whose duty it became to remove to Hospital as many Fever patients as possible; and to whom the Authority granted discretionary power of free admission to proper cases, which has been made use of on every available occasion.

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* Up to 1873 Typhus and "Continued" Fevers are not distinguished from each other in the Reports of the Dispensary, so that the proportion of the cases of the former can only be estimated. But judging from the propotion of cases of Typhus to other forms of Fever (Enteric and Simple Continued) since 1873, after which date the different fevers are separately classified, they constituted at least one-third of the whole number.

HENRY E. ARMSTRONG.

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* Pauper patients are admitted to the Fever Hospital.

BOROUGH OF NEWCASTLE-UPON-TYNE,

1879.

APPENDIX No. I.

TABLE I.

Population (Estimated by the Registrar General to the Middle of the Year)—146,948.

Registration Sub-Districts.	Births Registered in 52 Weeks, ended 27th December, 1879.					Deaths Registered in 52 Weeks, ended 27th Dec., 1879.		
	Male.		Female.		Total.	Male.	Female.	Total.
	Legitimate.	Illegitimate.	Legitimate.	Illegitimate.				
Westgate	1,112	47	1,072	65	2,296	745	691	1,436
St. Andrew's	271	17	235	15	538	203	167	370
St. Nicholas'	144	4	153	5	306	241	162	403
All Saints'	501	26	489	23	1,039	328	317	645
Byker	617	17	548	20	1,202	315	289	604
Borough Total ...	2,645	111	2,497	128	5,381	1,832	1,626	3,458

The Births represent a rate of 36·6, and the Deaths a rate of 23·5, per 1,000 estimated population. The Increase of Births over Deaths is 1,923.

TABLE II.

Annual Death-Rate per 1,000 Living in Newcastle for the past Five Years, compared with the Average Rate in 23 "Large Towns" in the United Kingdom.

	1875.		1876.		1877.		1878.		1879.	
	Annual Average in 23 Towns.	Annual Rate in Newcastle.	Annual Average in 23 Towns.	Annual Rate in Newcastle.	Annual Average in 23 Towns.	Annual Rate in Newcastle.	Annual Average in 23 Towns.	Annual Rate in Newcastle.	Annual Average in 23 Towns.	Annual Rate in Newcastle.
1st Quarter	29·6	27·4	26·8	25·5	24·7	24·2	25·5	23·2	27·8	25·3
2nd ,,	23·5	22·7	23·0	21·8	23·9	23·2	23·2	22·0	22·7	25·3
3rd ,,	23·7	28·9	22·7	22·6	20·5	20·2	23·5	25·4	18·4	20·8
4th ,,	25·3	25·4	22·4	21·2	23·0	21·8	25·2	24·1	24·6	22·7
Annual Rate	25·4	26·1	23·7	22·7	23·0	22·3	24·4	23·7	23·4	23·5

TABLE III.

RATES OF DEATH IN THE DIFFERENT CLASSES OF DISEASE PER 1,000 POPULATION IN THE BOROUGH, AND IN EACH REGISTRATION SUB-DISTRICT.

Registration Sub-Districts.	Westgate (V.W.)* excluding Benwell and Fenham.	St. Andrew's.	St. Nicholas' (H.)†	All Saints'.	Byker.	Borough.
Population (estimated to middle of 1879)	67,171	20,034	10,019	28,907	20,817	146,948
CLASS.	Rate per 1,000	Rate per 1,000	Rate per 1,000	Rate per 1,000	Rate per 1,000	Rate per 1,000
1. Zymotic‡	4·7	2·2	5·9	4·4	6·1	4·5
2 Constitutional	3·9	3·1	7·4	4·0	4·0	3·9
3. Local	8·6	9·0	15·4	9·9	10·8	9·7
4. Developmental	3·3	2·8	4·4	3·7	6·0	3·7
5. Violent Deaths (classed)	0·3	0·6	3·8	0·5	0·7	0·7
6. Do. (not classed)	0·09	0·1	0·8	0·2	0·4	0·2
Sudden Deaths (causes unascertained, causes not specified, or ill-defined) ..	0·5	0·7	1·8	0·7	1·2	0·8
Totals	21·39	18·5	39·5	23·4	29·2	23·5

* Workhouse and Vagrant Ward. † Hospital.

‡ The deaths in the Zymotic Class are corrected by distribution of those occurring at the Fever Hospital to the sub-district from which each came.

TABLE IV.

DEATHS FROM ALL CAUSES IN EACH SUB-DISTRICT ACCORDING TO ORDER OF CLASSIFICATION OF THE REGISTRAR GENERAL.

ORDER.	Westgate.	St. Andrew's	St.* Nicholas'	All Saints'.	Byker.	TOTALS.	
	Number of Deaths.	Number of Deaths.	Number of Deaths.	Number of Deaths.	Number of Deaths.	Deaths from all causes.	Percentage of Total Deaths in each of the different orders to total deaths from all causes.
CLASS I. ZYMOTIC DISEASES.							
1. Miasmatic	298	41	58	106	121	624	18·0
2. Enthetic	2	1	6	6	2	17	0·5
3. Dietic	10	1	2	6	1	20	0·6
4. Parasitic	2	...	1	1	...	4	0·1
	— 312	— 43	— 67	—119	—124	— 665	— 19·2
CLASS II. CONSTITUTIONAL DISEASES.							
1. Diathetic...	26	9	17	7	3	62	1·8
2. Tubercular	239	53	57	88	80	517	14·9
	— 265	— 62	— 74	— 95	— 83	— 579	— 16·7
CLASS III. LOCAL DISEASES.							
Diseases of—							
1. Nervous System... ...	213	55	41	89	68	466	13·5
2. Circulatory „	79	27	33	40	34	213	6·2
3. Respiratory „	217	73	46	136	90	562	16·3
4. Digestive „	51	21	16	15	23	126	3·6
5. Urinary „	17	2	13	6	4	42	1·2
6. Generative „	...	...	4	...	1	5	0·1
7. Locomotory „	2	...	1	...	2	5	0·1
8. Integumentary „ ...	..	2	..	1	2	5	0·1
	— 579	—180	—154	—287	—224	—1424	— 41·2
CLASS IV. DEVELOPMENTAL DISEASES.							
Diseases of—							
1. Children	38	10	10	20	37	115	3·3
2. Adults	8	1	1	7	6	23	0·7
3. Old People	119	25	10	19	30	203	6·0
4. Nutrition...	54	20	23	60	52	209	6·0
	— 219	— 56	— 44	—106	—125	— 550	— 15·9
CLASS V. VIOLENT DEATHS.							
1. Accident or Negligence	19	9	37	9	10	84	2·4
2. Homicide	...	1	...	1	...	2	0·06
3. Suicide	3	2	1	2	4	12	0·3
4. Execution	...	...	...	...	...	...	0·0
	— 22	— 12	— 38	— 12	— 14	— 98	— 2·8
Violent Deaths not classed	6	2	8	6	9	31	0·9
Sudden Deaths (causes unascertained)	...	...	...	...	...	...	0·0
Causes not specified or ill-defined	33	15	18	20	25	111	3·2
	— 39	— 17	— 26	— 26	— 34	— 142	— 4·1
Totals	1436	370	403	645	604	3458	

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* The number in St. Nicholas' sub-district is increased by 150 deaths in the Infirmary, and 8 in the Fever Hospital; 71 of the former came to that Institution from beyond the Borough.

TABLE V.—AGES AT DEATH.

Periods.	Westgate.	St. Andrews'.	St. Nicholas'.	All Saints'.	Byker.	Total in Borough.
Under 1 Year	267	73	79	177	188	784
1 Year and under 5 Years...	318	58	50	157	139	722
5 Years ,, 20 ,, ...	161	27	39	52	61	340
20 ,, ,, 40 ,, ...	167	46	80	70	56	418
40 ,, ,, 60 ,, ...	183	63	92	97	68	504
60 ,, ,, 80 ,, ...	278	86	60	83	74	581
80 ,, and above ...	62	17	3	9	18	109
Total (all ages) dying during the 52 weeks ended Dec. 27th, 1879	1436	370	403	645	604	3458

TABLE VI.

WEEKLY MEAN NUMBERS OF DEATHS AT SEVEN ÆTAL PERIODS.

	Westgate.	St. Andrews'.	St. Nicholas'.	All Saints'.	Byker.	Total in Borough.
Under 1 Year	5·1	1·4	1·5	3·4	3·6	15·0
1 Year and under 5 Years...	6·1	1·1	1·0	3·0	2·7	14·0
5 Years ,, 20 ,, ...	3·1	0·5	0·8	1·0	1·2	6·6
20 ,, ,, 40 ,, ...	3·2	0·9	1·5	1·4	1·0	8·0
40 ,, ,, 60 ,, ...	3·5	1·2	1·8	1·9	1·3	9·7
60 ,, ,, 80 ,, ...	5·2	1·7	1·4	1·6	1·4	11·2
80 ,, and above ...	1·2	0·3	0·0	0·2	0·3	2·1
Totals	27·4	7·1	8·0	12·5	11·5	66·6
Percentage of Deaths under 1 Year to total Deaths in Sub-District, &c. ...	18·6	19·8	19·6	27·4	31·1	22·7

TABLE VII.

BIRTHS AND DEATHS IN THE DIFFERENT QUARTERS IN THE YEARS 1876, 1877, 1878, 1879.

	BIRTHS.				DEATHS.			
	1876.	1877.	1878.	1879.	1876.	1877.	1878.	1879.
First Quarter	1,553	1,485	1,399	1,371	890	858	838	929
Second ,, ...	1,392	1,418	1,376	1,366	761	825	796	930
Third ,, ...	1,396	1,361	1,394	1,345	792	719	917	765
Fourth ,, ...	1,473	1,346	1,318	1,299	740	776	872	834
Total	5,814	5,610	5,487	5,381	3,183	3,178	3,423	3,458

TABLE VIII.

DEATHS OF CHILDREN UNDER 1 YEAR, AND PERSONS OVER 60 YEARS, IN 1876, 1877, 1878, 1879.

	NUMBER OF DEATHS.							
	Under 1 Year of Age.				Over 60 Years.			
	1876.	1877.	1878.	1879.	1876.	1877.	1878.	1879.
First Quarter	235	202	208	215	188	197	125	153
Second ,, ...	216	193	158	199	127	153	138	189
Third ,, ...	301	235	311	212	114	127	106	119
Fourth ,, ...	219	212	211	158	135	146	139	120
Total	971	842	888	784	564	623	508	581

TABLE IX.

DEATHS OF CHILDREN UNDER ONE YEAR OF AGE DURING THE 52 WEEKS ENDED 28TH DECEMBER, 1879.

CLASS.	CAUSE OF DEATH.	Westgate.	St. Andrew's.	St. Nicholas'.	All Saints'.	Byker.	TOTAL.
I.—ZYMOTIC DISEASES.	ORDER 1.						
	Measles	7	2	5	4	5	23
	Scarlet Fever (Scarlatina)	8	1	1	...	6	16
	Croup	4	...	1	2	...	7
	Whooping-cough	10	3	2	4	6	25
	Erysipelas	...	...	...	1	...	1
	Influenza	1	...	...	...	...	1
	Diarrhœa	8	3	4	5	7	27
	Other *Zymotic* Diseases	...	...	...	...	...	...
	ORDER 2.						
	Syphilis	...	...	3	4	1	8
	ORDER 3.						
	Privation	3	...	...	1	1	5
	Want of Breast-milk	4	...	1	...	...	5
	ORDER 4.						
	Thrush	2	...	1	1	...	4
II.—CONSTITUTIONAL DISEASES.	ORDER 2.						
	Scrofula	9	1	2	1	2	15
	Tabes Mesenterica	9	...	4	6	6	25
	Phthisis	1	...	...	...	2	3
	Hydrocephalus	5	...	1	...	2	8
	Carried forward	71	10	25	29	38	173

TABLE IX.—Continued.

Deaths of Children Under One Year of Age during the 52 Weeks ended 27th December, 1879.

CLASS.	CAUSE OF DEATH.	Westgate.	St. Andrew's.	St. Nicholas'.	All Saints'.	Byker.	Total.
	Brought forward	71	10	25	29	38	173
III.—Local Diseases.	Order 1.						
	Cephalitis	1	...	...	...	...	1
	Epilepsy	...	...	...	...	1	1
	Convulsions	46	12	12	30	17	117
	Brain Disease, etc.	4	...	1	5	7	17
	Order 2.						
	Heart Disease, etc.	...	...	...	...	1	1
	Order 3.						
	Bronchitis	26	15	4	33	25	103
	Pneumonia	11	3	1	5	5	25
	Lung Diseases, etc.	7	...	1	...	1	9
	Order 4.						
	Gastritis	...	...	...	1	...	1
	Enteritis	1	1	...	1	1	4
	Peritonitis	...	...	...	...	1	1
	Intussusception	...	1	...	...	...	1
	Jaundice	3	...	...	...	...	3
	Liver Disease, etc.	1	...	...	...	1	2
	Order 7.						
	Joint Disease, etc.	1	...	...	...	...	1
	Order 8.						
	Skin Disease, etc.	...	1	...	1	...	2
IV.—Developmental Diseases.	Order 1.						
	Premature Birth	22	8	7	5	21	63
	Cyanosis	1	...	...	2	...	3
	Spina Bifida	2	...	2	...	2	6
	Other Malformations	...	...	...	...	1	1
	Teething	5	1	...	5	6	17
	Order 2.						
	Childbirth	1	...	...	...	3	4
	Order 4.						
	Atrophy and Debility	43	17	19	48	42	169
V.—Violent Deaths, &c.	Order 1.—(Accident or Negligence.)						
	Fractures and Contusions	...	...	...	...	1	1
	Drowning	1	...	...	...	...	1
	Suffocation	9	2	2	6	5	24
	Order 2.—(Homicide.)						
	Murder and Manslaughter	...	1	...	...	...	1
	Order 4.—(Execution.)						
	Violent Deaths (not classed)	1	...	3	1	2	7
	Causes not specified or ill-defined	10	1	2	5	7	25
Representing a rate of 5·3 per 1,000 per Annum.	Total	267	73	79	177	188	784

TABLE X.

NON-CERTIFIED* DEATHS IN EACH SUB-DISTRICT DURING THE 52 WEEKS ENDED 27TH DECEMBER, 1879.

ALLEGED CAUSE OF DEATH.	Westgate.			St. Andrew's.			St. Nicholas'.			All Saints'.			Byker.			Total.		
	Under 1 Year.	1 Year and Under 2.	2 Years and Above.	Under 1 Year.	1 Year and Under 2.	2 Years and Above.	Under 1 Year.	1 Year and Under 2.	2 Years and Above.	Under 1 Year.	1 Year and Under 2.	2 Years and Above.	Under 1 Year.	1 Year and Under 2.	2 Years and Above.	Under 1 Year.	1 Year and Under 2.	2 Years and Above.
Scarlatina	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Virulent Measles ...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...
Original Weakness and being feebly nourished ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	...
Convulsions... ...	8	2	2	3	...	1	6	1	...	12	...	...	4	1	2	33	4	5
Supposed a Convulsion ...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	1	1
Convulsions from Dentition ..	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Suddenly, supposed from a Convulsion	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...
A Fit...	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	2	1	...
A Fit following on Paralysis ...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
Epileptic Fit ...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...
Heart Disease ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	2
Suddenly from Heart Disease	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Aneurism of Heart	...	...	1	...	...	...	...	...	...	...	...	...	...	...	..	...	...	1
Bleeding from Lungs with Heart Disease ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Bursting of a Blood Vessel on the Lungs ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Suddenly, supposed from Heart Disease	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	2
Bronchitis	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Inflammation ...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1
Premature Birth ...	3	...	...	2	...	...	4	...	...	...	...	...	1	...	...	10	...	...
Debility from Premature Birth	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	2	...	...
Natural Causes from Confinement	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Childbirth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
Difficult Labour ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Old Age	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	2
Some natural cause consequent on old age	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Marasmus	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Debility	7	...	...	2	...	1	1	...	...	10	...	...	3	...	...	23	...	1
Exhaustion	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	1	...	1
Accidental Suffocation ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
The effects of an injury to the Chest accidentally received 5 months since ...	...	...	1	...	...	...	...	...	...	...	...	...	..	...	...	...	...	1
Some Natural Cause	1	1	2	...	...	...	...	...	...	...	...	...	1	2	6	2	3	8
Not known	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Total	24	4	12	9	...	7	14	1	2	23	2	1	12	3	12	82	10	34

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* The term "Non-Certified" does not include Inquest cases, or cases certified by unqualified practitioners, but is applied only to deaths unattested by any medical attendant whatever, and on which no inquest has been held.

TABLE XI.

Return of Deaths from Miasmatic Diseases for the 52 Weeks ended 27th December, 1879, corrected by distribution of those occurring in the Fever Hospital to the Registration Sub-District from which each came.

	Number in Entire Borough.	Registration Sub-Districts.				
		West-gate.*	St. Andrew's	St. Nicholas'	All Saints'.	Byker.
Total Miasmatic Deaths	625	299	42	50	110	124
Including—						
Small-pox	...	...	...	...	...	...
Measles	91	25	7	13	19	27
Scarlet Fever	284	167	17	13	45	42
Diphtheria	4	2	1	...	1	...
Croup	25	14	...	3	5	3
Whooping Cough	80	31	4	6	15	24
Typhus	8	1	...	1	5	1
Enteric Fever	33	20	1	2	4	6
Erysipelas	7	3	...	...	2	2
Diarrhœa	61	20	8	7	12	14
Other Miasmatic Diseases	32	16	4	5	2	5
Annual Rate of Death from Miasmatic Disease per 1,000 population of each sub-district	4·3	4·5	2·1	5·0	3·8	6·0
Do. from Measles	0·6	0·4	0·3	1·3	0·7	1·3
Do. from Scarlet Fever	1·9	2·5	0·8	1·3	1·6	2·0
Do. from Whooping Cough	0·5	0·5	0·2	0·6	0·5	1·3
Do. from Diarrhœa	0·4	0·3	0·4	0·7	0·4	0·7

* Excluding Benwell and Fenham.

TABLE XII.

Locality of Deaths from Prevalent Zymotic Diseases, corrected by distribution of those in the Fever Hospital to the Sub-District from which each came.

Deaths in Westgate Sub-District.

LOCALITY.	MEASLES.				SCARLET FEVER.				WHOOPING COUGH.				AUTUMNAL DIARRHŒA. During 13 Weeks ended 27th Sept., 1879.		
	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Under 1 Year.	1 Year & under 2.	All Ages.
Durham street ...	...	...	...	...	...	...	...	3	1	...	...	...	...	...	...
Loadman street ..	...	1	...	...	2	...	...	...	...	1	...	...	..	...	...
George road ..	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Douglas terrace ...	...	...	...	...	3	...	...	...	1	...	...	...	...	...	...
Pitt street ...	...	...	...	...	5	...	...	2	...	...	...	...	...	...	...
Panmure street ...	...	...	1	...	1	1	2	...	...	...	...	...	...	...	...
West street ..	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Dunn street ...	...	...	...	...	1	...	...	...	..	...	...	...	...	...	...
Elswick east terrace...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...
Rendel street ...	...	...	...	...	1	1	...	...	...	..	...	...	...	...	...
Blandford street ...	...	1	...	...	2	2	2	4	...	...	...	...	...	...	...
Westgate road ...	...	...	...	...	1	...	2	...	...	...	...	...	...	...	...
Strickland street ...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Newcomb street ...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Hedley street ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Workhouse ...	...	...	1	1	...	...	...	...	1	6	2	...	..	...	1
Noble street ...	...	...	1	...	1	...	...	..	...	...	...	...	...	...	...
Cookson street ...	...	...	...	..	2	...	...	...	...	...	...	...	...	...	...
Ramshaw street ...	...	...	..	...	1	...	...	...	...	...	...	...	...	...	...
Cross Bayley street ...	...	...	...	...	..	...	...	...	1	...	...	...	...	...	...
George street ...	...	...	...	...	...	...	...	2	2	1	...	...	...	...	...
Stone street ...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...
Buckingham street ...	1	...	...	...	...	...	...	2	...	...	...	...	...	...	...
Centre street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stanhope street ...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Westmoreland street	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Diana street ...	1	1	...	...	...	...	...	1	...	...	1	...	...	...	...
Westmoreland lane ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bayley street ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Oystershell lane ...	...	...	...	...	...	2	...	1	...	...	...	...	1	...	1
Callerton place ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Jefferson street ...	...	...	...	...	...	...	...	1	..	1	...	...	...	...	...
Back George street ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Mill lane ...	...	...	1	...	...	1	...	4	...	...	...	...	...	...	...
Suffolk street ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Blenheim street ...	...	1	...	...	...	1	...	2	...	...	...	...	...	...	...
Gloucester street ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
William street ..	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
Hamilton street ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Back Rendel street ...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Chapel lane ...	...	...	...	...	...	3	...	1	...	...	...	...	...	...	...
Hawes street ...	...	...	...	...	...	...	1	1	...	1	...	...	...	...	...
Back Hawes street ...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Temple street ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Royal Grammar School	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...
Brougham place ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Carried forward ...	5	9	4	1	28	18	9	25	7	11	4	...	1	...	2

TABLE XII.—Continued.

Locality of Deaths from Prevalent Zymotic Diseases, corrected by distribution of those in the Fever Hospital.

Deaths in Westgate Sub-District.—*Continued.*

LOCALITY.	MEASLES.				SCARLET FEVER.				WHOOPING COUGH.				AUTUMNAL DIARRHŒA.		
	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	During 13 Weeks ended 27th Sept., 1879.		
													Under 1 Year.	1 Year & under 2.	All Ages.
Brought forward ...	5	9	4	1	28	18	9	25	7	11	4	...	1	...	2
Handyside street ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Railway place ...	...	...	...	...	...	1	1	...	...	...	...	1	1	...	1
Sycamore street ...	...	1	...	...	...	...	2	2	...	2	1	...	1	...	1
Brunel street ...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...
Park road ..	...	...	...	...	...	1	1	1	...	...	...	...	...	...	...
Bell terrace ...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
Ivy Croft, Grainger Park road	...	...	...	...	...	1	..	...	...	...	...	...	...	...	...
Barrack square ...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Wellington terrace ...	...	1	...	...	...	1	...	1	...	...	...	...	...	...	...
Westfield .	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...
Elswick row ...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...
Derby street ...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
Mary street ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Herbert street ...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...
Belgrave terrace ...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Carr street ...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...
Edward street ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
St. Stephen's terrace ..	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...
De Grey street ...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...
Duke street ...	...	...	..	...	...	...	1	1	...	...	...	...	...	...	...
Railway terrace ...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...
Gloucester road ..	...	...	...	...	...	...	1	3	...	...	...	...	...	...	...
Cromwell street ...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Sunderland street .	...	...	...	...	...	...	1	2	...	...	...	...	...	...	...
Mill street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Mitford street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Ord street ...	...	..	...	...	...	...	...	1	...	...	...	...	...	...	...
Water street ...	...	...	...	...	..	...	...	1	...	...	...	...	...	...	...
Portland street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Barrack road ..	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...
Choppington street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Meldon street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Back St. Cuthbert's ter.	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...
Tulloch street ...	...	..	...	...	...	...	...	1	...	...	...	...	...	...	...
Clumber street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Dunn's Cottages ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Mather street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Hammond street ..	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Ryehill ..	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Grove street ..	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Dobson street ..	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Cambridge street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Albert terrace ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Carried forward ...	5	13	6	1	28	30	27	58	7	14	6	1	3	...	4

TABLE XII.—Continued.

Locality of Deaths from Prevalent Zymotic Diseases, corrected by distribution of those in the Fever Hospital.

Deaths in Westgate Sub-District.—*Continued.*

LOCALITY.	MEASLES.				SCARLET FEVER.				WHOOPING COUGH.				AUTUMNAL DIARRHŒA.		
	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	During 13 Weeks ended 27th Sept., 1879.		
													Under 1 Year.	1 Year & under 2.	All Ages.
Brought forward ...	5	13	6	1	28	30	27	58	7	14	6	1	3	...	4
Lord street ...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Kyle place ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Warden street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Pine street ...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...
Elswick street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Beaumont street ...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...
Bath lane terrace ..	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Marsden street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Essex street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Bell street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Churchill street ..	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Tweed street ..	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...
Penn street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Ashfield terrace east ..	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Crispen street ...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Scotswood road ...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Raglan place ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Wingrove ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Back Derby street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Lawson street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Railway street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Snow street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Total	5	13	6	1	28	30	27	82	7	14	6	4	3	...	4

Deaths in St. Andrew's Sub-District.

LOCALITY.	MEASLES.				SCARLET FEVER.				WHOOPING COUGH.				AUTUMNAL DIARRHŒA.		
	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	During 13 Weeks ended 27th Sept., 1879.		
													Under 1 Year.	1 Year & under 2.	All Ages.
Franklin street ...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Gallowgate ...	1	...	...	...	...	...	...	1	...	...	...	...	...	1	1
Prudhoe street ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Percy court ...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Bath lane ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Leazes terrace ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Back Oxford street ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Sandyford lane ...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Carolina terrace ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Worthy's yard ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Ellison terrace ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Prudhoe place ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Carnaby's yard ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Carried forward ...	3	2	...	...	1	5	...	1	1	1	...	...	...	2	2

TABLE XII.—Continued.

Locality of Deaths from Prevalent Zymotic Diseases corrected by distribution of those in the Fever Hospital.

Deaths in St. Andrew's Sub-District.—*Continued.*

LOCALITY.	MEASLES.				SCARLET FEVER.				WHOOPING COUGH.				AUTUMNAL DIARRHŒA. During 13 Weeks ended 27th Sept., 1879.		
	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Under 1 Year.	1 Year & under 2.	All Ages.
Brought forward ...	3	2	...	...	1	5	..	1	1	1	...	...	...	2	2
Barracks ...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...
North street ...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
Liverpool street ...	...	...	...	...	...	...	1	...	...	...	1	1	...	1	1
Market street ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Spital Tongues ...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
Erick street ...	...	...	...	...	...	...	2	...	...	...	...	...	1	...	1
Morpeth street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Albion place ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Carliol street ...	...	...	...	...	...	...	...	1	...	...	..	...	...	...	...
Leazes crescent ...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Eldon street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Clayton street ...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Total	3	2	...	2	1	7	4	5	1	1	1	1	3	3	6
Deaths in St. Nicholas' Sub-District.															
St. Nicholas' Churchyd.	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stowell street ...	1	...	...	...	1	...	1	4	...	...	...	...	...	...	...
Tuthill stairs ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Forth terrace ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Harvey's yard, Side ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bailiffgate ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cloth market ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Friars green ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Whitefriar place ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Queen's lane ...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...
Dispensary lane ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Dawson's court ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Pudding chare ...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Westgate road ...	...	...	...	...	...	...	1	1	...	...	...		...	...	...
Hanover street ...	...	...	...	...	...	...	...	2	...	...	...	2	...	...	...
Tiger Inn, Close ...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...
Friars ...	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...
Sandmill court ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Orchard street ...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Dog leap stairs ...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Forth banks ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	6	6	...	1	1	1	2	12	1	...	1	5	...	...	...

TABLE XII.—Continued.

Locality of Deaths from Prevalent Zymotic Diseases, corrected by distribution of those in the Fever Hospital.

Deaths in All Saints' Sub-District.

LOCALITY.	MEASLES.				SCARLET FEVER.				WHOOPING COUGH.				AUTUMNAL DIARRHŒA.		
	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	During 13 Weeks ended 27th Sept., 1879.		
													Under 1 Year.	1 Year & under 2.	All Ages.
Victoria place ...	...	...	...	..	1	...	...	...	...	...	...	...	...	...	...
Egypt square ...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Erick street ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Howard street ...	...	1	...	...	1	...	...	1	...	...	...	...	...	...	...
Chatham place ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pilgrim street ...	...	1	...	..	...	...	...	...	1	...	...	...	...	...	...
Falconar street ...	...	...	...	...	1	..	...	...	...	...	...	...	...	...	...
New road ...	...	...	1	...	2	...	...	1	...	...	...	...	...	...	...
Nag's Head entry ...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...
Eddy's entry ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Blagdon street ...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Dog bank ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Melbourne street ...	...	...	...	...	1	...	1	2	...	...	1	...	...	...	1
Silver street ...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...
The Borough Gaol ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pandon bank ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Ridley street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cut bank ...	...	1	...	...	...	...	...	...	2	...	...	...	...	...	...
Lime street ...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...
Half Moon lane, Sandgate	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wilkinson's buildings	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Turner street ...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Mordue's yard, Ouseburn	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Camden street ...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...
Shield street ...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...
Little Blagdon street..	...	...	...	...	...	1	1	2	...	...	...	...	...	1	1
Industrial dwellings...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Wesley street ...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...
Plummer chare ...	...	1	...	...	...	...	...	...	...	...	..	...	...	...	...
Concord court ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
St. Mary's street, Sandgate	...	...	...	...	...	1	..	...	...	...	...	...	...	...	...
Cellar's entry, Sandgate	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Rose & Crown yard, New road	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Canada street ...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Union street ...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...
St. Ann's street ...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	1
Grenville terrace ...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
New Bridge buildings	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Keelman's hospital ...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	1
Argyle street ...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Rock street ...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Carried forward ...	8	8	2	...	11	9	6	7	4	3	7	...	1	1	4

TABLE XII.—Continued.

Locality of Deaths from Prevalent Zymotic Diseases, corrected by distribution of those in the Fever Hospital.

LOCALITY.	MEASLES.				SCARLET FEVER.				WHOOPING COUGH.				AUTUMNAL DIARRHŒA.		
	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	During 13 Weeks ended 27th Sept., 1879.		
													Under 1 Year.	1 Year & under 2.	All Ages.
Deaths in All Saints' Sub-District.—*Continued.*															
Brought forward ...	8	8	2	...	11	9	6	7	4	3	7	...	1	1	4
Richmond street ...	...	...	...	1	...	...	1	1	...	...	...	...	...	...	...
Sallyport ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Buxton street ...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...
Back Sarah street ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Albert street ...	..	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Copland terrace ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Painter heugh ...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
St. Ann's row ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Total	8	8	2	1	11	9	7	15	4	3	7	1	1	1	4
Deaths in Byker Sub-District.															
Bryson terrace ...	1	...	...	...	1	...	...	...	...	...	1	...	...	..	...
Byker hill ...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Burton street ...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...
Cambridge street ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Addison terrace ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Brewery yard ...	2	...	...	...	...	..	...	...	...	...	...	...	...	...	...
Warkworth street ...	...	...	...	...	...	...	...	...	1	...	...	...	...	..	...
Rosedale street ...	1	...	...	...	1	2	...	...	...	...	...	...	...	...	...
Flora street ...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Addison street ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Portland terrace ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Grafton street ...	...	...	...	...	...	...	...	1	1	...	...	...	1	...	1
Corbridge street ...	...	...	...	...	...	...	..	...	1	...	...	...	...	...	...
Hannington place ...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Brough's buildings ...	1	...	..	...	...	...	...	...	...	...	...	...	...	...	...
Conyers road ...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...
Catterick's buildings..	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Shipley street ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Albion row ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Clifford street ...	...	...	...	...	...	...	...	5	1	...	...	1	...	...	...
Prospect terrace ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Peter's ...	3	...	1	...	...	...	...	2	...	...	...	...	1	...	1
Quality row ...	1	...	...	...	...	...	...	...	...	1	1	...	...	1	1
St. Lawrence ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Carried forward ...	14	1	1	...	6	2	...	8	11	2	3	1	2	1	3

TABLE XII.—CONTINUED.

LOCALITY OF DEATHS FROM PREVALENT ZYMOTIC DISEASES, CORRECTED BY DISTRIBUTION OF THOSE IN THE FEVER HOSPITAL.

DEATHS IN BYKER SUB-DISTRICT.—*Continued.*

LOCALITY.	MEASLES.				SCARLET FEVER.				WHOOPING COUGH.				AUTUMNAL DIARRHŒA. During 13 Weeks ended 27th Sept., 1879.		
	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Under 1 Year.	1 Year & under 2.	All Ages.
Brought forward ...	14	1	1	...	6	2	...	8	11	2	3	1	2	1	3
Wansbeck terrace ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Leighton street ...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Potts street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ripponden street ...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Byker bank ...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...
Wilfred street ...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...
Parker street ...	1	1	1	...	...	...	...	...	1	...	1	...	...	...	...
Byker buildings ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Maling street ...	...	...	...	...	1	1	...	...	...	...	...	...	..	...	...
St. Anthony's ...	...	1	...	...	...	6	1	1	..	...	...	...	...	...	1
Tynemouth road ...	...	2	...	...	...	...	...	4	...	...	...	...	...	...	...
Rosedale terrace ...	...	...	...	..	...	1	...	...	...	...	...	...	...	...	...
James place ...	...	...	..	...	...	1	...	...	...	..	...	...	...	...	...
Brandling village ...	...	..	..	...	...	1	...	...	...	...	...	...	...	...	...
Headlam street ...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...
Molyneux street ...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Thornborough street...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Clayton park road ...	...	...	...	...	..	...	...	...	...	...	...	...	1	...	1
Jesmond vale house...	...	...	...	..	...	...	...	1	...	...	...	...	...	...	...
Clayton park square...	...	...	...	...	...	..	...	1	...	...	...	...	...	...	...
Portland road ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Mawson street ..	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Cook street ...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Holly avenue ...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Total	18	7	2	...	10	12	3	17	13	3	5	3	3	1	5

SUMMARY OF TABLE XII.

REGISTRATION SUB-DISTRICTS.	MEASLES.					SCARLET FEVER.					WHOOPING COUGH.					AUTUMNAL DIARRHŒA.		
																During 13 Weeks ended 27th Sept., 1879.		
	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Total.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Total.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Total.	Under One Year.	One Year and under Two Years.	All Ages.
Westgate ...	5	13	6	1	25	28	30	27	82	167	7	14	6	4	31	3	...	4
St. Andrew's ...	3	2	...	2	7	1	7	4	5	17	1	1	1	1	4	3	3	6
St. Nicholas' ...	6	6	...	1	13	1	1	2	12	16	1	...	1	5	7	...	...	...
All Saints' ...	8	8	2	1	19	11	9	7	15	42	4	3	7	1	15	1	1	4
Byker	18	7	2	...	27	10	12	3	17	42	13	3	5	3	24	3	1	5
Grand Total of Deaths	40	36	10	5	91	51	59	43	131	284	26	21	20	14	81	10	5	19

TABLE XIII.

ADMISSIONS TO AND DEATHS AT THE NEWCASTLE FEVER HOSPITAL FROM 1ST JANUARY TO 31ST DECEMBER (INCLUSIVE), 1879.

DISEASES.	ADMISSIONS.											DEATHS.							
	Jan.	Feb.	Mar.	April	June.	July.	Sept.	Oct.	Nov.	Dec.	Total	Jan.	April	June.	July.	Oct.	Nov.	Dec.	Total
Enteric Fever ...	3	8	...	...	...	...	...	...	...	...	11	1	...	...	...	...	...	...	1
Scarlet Fever ...	1	...	2	1	2	1	...	1	...	...	8	...	1	1	1	...	...	...	3
Typhus	...	...	...	...	...	1	3	4	6	1	15	...	...	...	...	1	1	1	3
Diphtheria... ...	...	1	...	...	...	...	...	...	..	...	1	...	...	...	...	...	...	...	...
Ulcerated Throat ..	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Gangrene of Lung	...	...	...	1	...	...	...	...	...	...	1	...	1	...	...	...	...	...	1
Abscess of Thigh ...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...
TOTAL ...	4	10	2	2	2	3	3	5	6	1	38	1	2	1	1	1	1	1	8

TABLE XIV.

Return of Suspected and Unwholesome Provisions Inspected during 1879.

PROVISIONS INSPECTED.	Amount Inspected.	Condition.		Bad—How disposed of.	
		Fit for Food.	Unfit for Food.	Destroyed by Order of Justice.	Destroyed with Consent of the Owner.
Carcases of Beef.. ...	97	81	16	8	8
,, Veal ...	4	4	...	...	...
,, Mutton ...	45	28	17	...	17
,, Pork ...	150	114	36	...	36
Lbs. Lard	54	...	54	54	...
Eggs	1,200	...	1,200	1,200	...

Of the 81 carcases of beef returned as fit for food, 17 were more or less bruised during the transit of the animals. All the bruised portions were cut off and destroyed.

(Signed) WM. HEDLEY, Inspector.

TABLE XV.

Infected Articles Destroyed and Replaced by the Health Department during the Year 1879.

40 Half Straw Mattresses.
12 Bed Ticks.
10 Flock Beds.
2 Rabbit Down Beds.
4 Feather Pillows.

13 Flock Pillows.
7 ,, Bolsters.
2 Bolster Cases.
3 Pillow ,,
1 Green Woollen Rug.

Infected Articles Purified in the Disinfecting Apparatus.

From the Borough.	From the Fever Hospital.
90 Beds.	2 Beds.
171 Mattresses.	12 Mattresses.
220 Pillows.	59 Pillows.
88 Bolsters.	19 Quilts.
108 Blankets.	59 Blankets.
80 Quilts.	45 Rugs.
304 Articles of Wearing Apparel.	47 Books.
139 Rugs, Mats, and Carpets.	84 Articles of Wearing Apparel.
13 Cushions.	2 Boxes of Nurses' Clothing.
77 Bed and Window Curtains.	13 Miscellaneous Articles.
Box of Books.	
40 Miscellaneous Articles.	

TABLE XVI.

SUMMARY OF CASES DISINFECTED BY THE INSPECTORS OF NUISANCES DURING THE YEAR ENDED 31ST DECEMBER, 1879.

PARISH OR TOWNSHIP.	NATURE OF DISEASE.							
	Scarlet Fever.	Enteric Fever.	Typhus Fever.	Measles.	Small Pox.	Diphtheria.	Fever (other varieties.)	TOTAL.
Elswick	199	11	...	18	1	...	...	229
Westgate	126	14	1	49	...	3	1	194
St. Andrew's	32	1	...	44	...	1	2	80
St. John's	20	1	...	9	...	...	...	30
St. Nicholas'	8	2	1	9	...	...	...	20
All Saints'	104	24	16	83	...	1	...	228
Jesmond	3	...	...	...	...	...	...	3
Byker	78	13	1	58	...	...	1	151
TOTAL	570	66	19	270	1	5	4	935

TABLE XVII.

SUMMARY OF NUISANCE CASES FOR THE YEAR ENDED 31ST DECEMBER, 1879.

PARISH OR TOWNSHIP.	Rooms Closed unfit for Human Habitation.	Rooms Whitewashed, Purified, and Repaired.	Yards, Passages, & Staircases Cleansed and Repaired.	Dilapidated Privies and Ashpits Repaired.	Defective Drains & Gutters Cleansed and Repaired.	Swine and other Animals Removed.	Water Closets Cleansed and Repaired.	Over-crowding.	Defective Water Spouts Repaired.	Water Supply.	Branch Drains.	New Water-Closets, Privies, and Ashpits.	Stagnant Pools and Accumulations.	Offensive Trades.	TOTAL.
Elswick ...	52	9	44	102	231	2	151	1	16	35	3	13	9	...	668
Westgate ...	27	17	82	169	218	2	69	2	12	27	5	20	4	...	654
St. Andrew's...	36	14	56	89	77	7	44	2	4	3	1	36	20	...	389
St. John's ...	8	11	45	50	45	2	12	...	31	2	...	5	4	...	215
St. Nicholas'..	12	8	28	43	20	7	33	2	3	18	7	10	16	...	207
All Saints' ...	60	9	182	296	133	6	70	14	11	55	6	40	22	...	904
Jesmond ...	2	...	1	12	11	...	1	1	...	1	1	1	1	...	32
Byker ...	111	13	202	386	114	11	12	12	31	11	4	43	11	..	961
TOTAL ...	308	81	640	1147	849	37	392	34	108	152	27	168	87	...	4030
Notices for Consumption of Smoke															12
TOTAL															4042

TABLE XVIII.

SUMMARY OF PROCEEDINGS TAKEN BEFORE THE MAGISTRATES OF THE BOROUGH BY THE SANITARY DEPARTMENT DURING THE YEAR ENDED 31ST DEC., 1879.

Nature of Complaint.	No. of Cases.	How Disposed of.	Amounts of Penalties Imposed.		
			£	s.	d.
Defective Privies and Ashpits	12	Six did Work and paid Costs; one Dismissed; and five ordered to be done by Magistrates, and paid Costs	...		
Defective Drains and Sinks	9	Four did Work and paid Costs; two Dismissed; and three ordered to be done by Magistrates, and paid Costs ...	...		
Defective & obstructed Water Closets ...	4	Three did Work and paid Costs; and one ordered to be done by Magistrates ...	...		
Water Notices	5	Three did Work and paid Costs; one Fined 5s. and Costs; and one Fined 20s. and Costs	1	5	0
Stopped Drains ...	2	Did Work and paid Costs	...		
Dilapidated Earth Closet	1	Did Work and paid Costs	..		
Breach of Sanitary Bye-Laws	15	Nine did Work and paid Costs; two Dismissed; and four ordered to be done by Magistrates, and paid Costs ...	...		
White-washing ...	3	Did Work and paid Costs	...		
Offensive Accumulations	2	In one case Costs were paid and refuse removed; the other dismissed by Magistrates	...		
With not obeying order of Magistrates to reconstruct Drain ...	1	Magistrates imposed a Fine of £3 8s. for 34 days' Penalties, Order 9s. 6d., and Costs	3	17	6
Smoke Notice	1	Fined 40s. and Costs	2	0	0
Depositing Ashes, &c., on Carriage-way ...	1	Fined 2s. 6d. and Costs	0	2	6
With having used Back Premises for slaughtering Pigs without a License	1	Fined 5s. and Costs	0	5	0
House unfit for human habitation	1	An order made by Magistrates for house to be closed	...		
Dirty Yards and Stairs	9	Did Work and paid Costs	...		
TOTAL	67		7	10	0

TABLE XIX.

1879.—RAINFALL, MEAN TEMPERATURE, &c.

1st Quarter.			2nd Quarter.			3rd Quarter.			4th Quarter.		
Week ended	Rainfall. Inches.	Mean Temp. Deg. Fahr.	Week ended	Rainfall. Inches.	Mean Temp. Deg. Fahr.	Week ended	Rainfall. Inches.	Mean Temp. Deg. Fahr.	Week ended	Rainfall. Inches.	Mean Temp. Deg. Fahr.
1879.			1879.			1879.			1879.		
Jan. 4...	0·00	38·0	April 5...	0·00	43·9	July 5...	0·57	56·6	Oct. 4...	0·13	47·3
,, 11...	0·57	33·4	,, 12...	1·36	40·5	,, 12...	0·27	54·8	,, 11...	0·04	50·1
,, 18...	0·56	36·0	,, 19...	0·11	40·7	,, 19...	1·40	49·3	,, 18...	0·28	43·8
,, 25...	0·31	30·8	,, 26...	0·32	40·3	,, 26...	0·21	56·5	,, 25...	0·21	49·3
Feb. 1...	0·99	30·8	May 3...	0·19	42·0	Aug. 2...	1·22	61·1	Nov. 1...	0·03	42·2
,, 8...	0·06	35·4	,, 10...	0·37	41·8	,, 9...	0·36	56·0	,, 8...	0·61	45·6
,, 15...	0·64	38·7	,, 17...	0·54	47·3	,, 16...	0·71	59·7	,, 15...	0·31	39·3
,, 22...	1·07	32·8	,, 24...	0·52	51·6	,, 23...	0·25	58·8	,, 22...	0·29	43·3
March 1...	0·85	34·3	,, 31...	0·32	50·1	,, 30...	0·49	57·6	,, 29...	0·79	37·3
,, 8...	0·00	44·6	June 7...	0·69	49·8	Sept. 6...	0·21	55·9	Dec. 6...	1·20	22·1
,, 15...	0·50	39·9	,, 14...	1·49	55·1	,, 13...	0·35	57·1	,, 13...	0·00	32·5
,, 22...	0·15	38·3	,, 21...	0·86	54·6	,, 20...	0·03	56·8	,, 20...	0·00	39·3
,, 29...	0·17	36·6	,, 28...	0·60	55·6	,, 27...	0·28	49·4	,, 27...	0·00	37·6
Total...	5·87	Mean. 36·1	Total...	7·37	Mean. 47·2	Total...	6·35	Mean 56·1	Total...	3·89	Mean. 40·7

Total Rainfall during the Year 1879 = 23·48 Inches.

Mean Temperature during the Year 1879 = 45·0 Deg. Fahr.

APPENDIX No. II.

BOROUGH OF NEWCASTLE-UPON-TYNE.

PREVENTION OF INFECTIOUS DISEASE.—RECOMMENDATIONS TO PRINCIPALS, MANAGERS, AND TEACHERS OF SCHOOLS.

THE Medical Officer of Health having submitted to the Sanitary Authority of the Borough suggestions and recommendations which he has prepared with the view of more effectually preventing the spread of Scarlet Fever and other infectious disease, the Sanitary Authority desire to communicate the same to the different School Authorities in order that the subject may have their consideration.

The recommendations are as follow, viz :—

1.—That before the admission and re-admission to School of any child, strict enquiry be made as to whether it or any of the family with which it resides is, or has been, suffering from any infectious or communicable disease, such as Small-pox, Measles, Scarlet Fever (otherwise termed Scarlatina), Diphtheria, Whooping Cough, "Fever," or any contagious skin eruption.

2.—That both parents and children be given to understand that they are required to give immediate notice to School Authorities of the existence of such disease in their homes ; and that no child so affected, or residing with others so affected, will be allowed to attend school or, so far as can be prevented, to come in contact with other scholars.

3.—That, if possible, when any child is absent from school on account of illness, reliable information as to the nature of such illness be obtained.

4.—That the attention of Teachers be directed to all cases amongst their scholars of spotted or reddish rashes, feverish sore throat, swelling of the glands under the lower jaw, peeling of the skin, puffy swelling of the face, limbs or body, or spasmodic cough with whooping inspiration or vomiting, as being signs of such diseases at an infectious stage.

5.—That at all times the strictest personal cleanliness of scholars be enjoined and insisted on.

6.—That the Schoolrooms be well lighted and provided during school hours (in Winter and Summer) with a plentiful supply of fresh air without draught ; that in the intervals of school hours the doors and windows be opened for the purpose of ventilation ; and that during Winter each class-room be maintained in every part at an even temperature of about 55 degrees Fahrenheit.

7.—That the floors, desks, and forms of the School be kept thoroughly clean ; that the walls be occasionally brushed down and limewashed or otherwise cleansed ; and that the rooms be fumigated after each school term, or oftener, during the prevalence of epidemic disease.

8.—That the Closets, Urinals, and Lavatories be separated and detached from the School itself, and so situated as to allow of free circulation of air between them and the main building, and that they be well supplied with water and regularly flushed, so as to be kept clean and free from offensive smell.

In the event of difficulty with individual cases, the Medical Officer of Health will be happy to give advice or assistance on application by letter.

By order of the Sanitary Authority of the Borough,

HENRY E. ARMSTRONG, M.R.C.S.,
MEDICAL OFFICER OF HEALTH.

Health Department,
Town Hall, Newcastle-upon-Tyne,
7th May, 1879.

APPENDIX No. III.

BOROUGH OF NEWCASTLE-UPON-TYNE.

INSTRUCTIONS TO HEADS OF FAMILIES, HOUSEHOLDERS, AND OTHERS, FOR PREVENTING THE SPREAD OF FEVER, SMALL-POX, SCARLATINA, MEASLES, AND OTHER INFECTIOUS OR CONTAGIOUS DISEASES.

Separation of the sick.

1.—Separate the sick person from the rest of the family directly illness appears, placing him, if possible, in a room at the top of the house, first taking care to remove carpets, curtains, and all unnecessary articles of furniture and clothing therefrom.

Ventilation of sick-room and house.

2.—Admit fresh air by opening the upper sash of the window. Keep the fireplace open, and light a fire should the weather permit. Fresh air should be freely admitted through the whole house by means of open windows and doors; the more air passing through the house the less likely is the disease to spread.

Disinfection of sick-room.

3.—Hang up a sheet over the outside of the doorway of the sick room, and keep it wet with a mixture made of either a quarter of a pint of carbolic acid (No. 4) or a pound of chloride of lime and a gallon of water. The floor should frequently be well sprinkled with either of the same disinfectants, and cloths, wetted with either, hung up in the room.

Disinfection of matters passed by the sick.

4.—Everything passing from the sick person should be received into vessels containing half a pint of a solution of green copperas, made by dissolving one pound of the copperas in a gallon of water. A like quantity of the solution of copperas should be added to the discharges before emptying them into the closet.

Disinfection of sinks, &c.; care of well- and drinking-water.

5.—Every sink, closet, or privy on the premises should have a quantity of one of the above-named disinfectants (see paragraph 3) poured into it daily, and the greatest care should be taken to prevent the contamination of well- or drinking-water by any discharge from the sick person.

Disinfection of utensils.

6.—All cups, glasses, spoons, &c., used by the sick person should be first washed in the above-named solution of carbolic acid, and afterwards in hot water, before being used by any other person.

7.—No article of food should be allowed to remain in the sick room. No food or drink that the sick person has tasted, or that has been in the sick room, should be given to any one else.

Disinfection of linen, &c.

8.—All bed and body linen, as soon as removed from the sick person, should be first put into a solution of carbolic acid of the above-mentioned strength, and after remaining therein for at least an hour, should be well boiled in water.

Handkerchiefs not to be used.

9.—Instead of handkerchiefs, small pieces of rag should be used by the patient; and these, when soiled, should be immediately burnt.

Patient and nurses; personalcleanliness

10.—The strictest attention must be paid to the personal cleanliness of the sick. Persons attending on the sick should not wear woollen garments, as they are likely to retain infectious poison; dresses of cotton, or of some washable material should be worn. Nurses should always wash their hands immediately after attending to the sick person, using carbolic acid soap instead of ordinary soap.

Precautions with regard to visitors.

11.—It is of the utmost importance that the sick room be not frequented by others than those in attendance on the sick, as the clothing of visitors is very liable to carry away infection.

Precautions during recovery.

12.—The scales and dusty powder from the skin after scarlet fever, and the crusts after small-pox, are highly infectious. In such cases, the convalescent person must not be allowed to mix with the rest of the family *until the skin is again perfectly smooth.* The use of warm baths and carbolic soap after all infectious diseases is most essential. Clothes used during the time of illness, or that have been in any way exposed to infection, *must not be worn again until they have been properly disinfected.*

Final disinfection of sick-room, bedding, &c.

13.—When the sickness has terminated, the sick-room and its contents should be disinfected and cleansed. This should be done either by the Officers of the Sanitary Authority, or in the following manner:—Spread out and hang upon lines all articles of clothing and bedding; well close the fireplace, windows, and all openings; then take a quarter to half a pound of brimstone, broken into small pieces, put it into an iron dish supported over a pail of water, and set it on fire with some live coals; close the door, stop all crevices, and allow the room to remain shut up for twenty-four hours. The room should then be freely ventilated by opening the doors and windows, the ceiling should be whitewashed, the paper stripped from the walls and burnt, and the furniture and all wood and painted work be well washed with soap and water containing a little chloride of lime. Beds, mattresses, and articles which cannot well be washed, should be submitted to the action of heat in the disinfecting chamber provided by the Sanitary Authority, in which all such articles will be purified free of charge on application. *Until this process of disinfection is effectually carried out, the room cannot be safely occupied.*

Attendance of children at school.

14.—Children should not be allowed to attend school from a house in which there is infectious disease, as, although not ill themselves, they are very likely to carry the infection, and so spread the disease. No child, during or after infectious sickness in its family, should be allowed to re-enter a school without a certificate from the medical attendant stating that he or she can do so without any danger of infecting other children.

Precautions in case of death.

15.—In case of death, the body should not be removed from the room, except for burial, unless taken to a mortuary; nor should any article be taken from the room unless to the disinfecting chamber, or until disinfected as before directed in Rule No. 13. The body should be put into a coffin with a pound or two of carbolic powder. The coffin should be fastened down, and the body buried without delay.

N.B.—Carbolic Acid and other Disinfectants may be bought of any druggist, or may be had, gratis, on application at the Sanitary Office, Town Hall, by those who cannot afford to buy them.

By order of the Sanitary Authority of the Borough,

HENRY E. ARMSTRONG, M.R.C.S.,
Medical Officer of Health.

Health Department,
Town Hall, Newcastle-upon-Tyne,
May, 1879.

Attention is particularly directed to the following Provisions of the "Public Health Act, 1875," in reference to "Infectious Disorders."

WHERE SUCH DISEASE HAS EXISTED—

> "The owner or occupier may be required to cleanse and disinfect any house or room, or the cabin or berth of any ship or vessel, and the articles contained therein likely to retain infection, under a Penalty not exceeding Ten Shillings a day for neglect."

ANY PERSON WHO—

(1.) While suffering from any dangerous infectious disorder wilfully exposes himself without proper precaution against spreading the said disorder in any street, public place, shop, inn, or public conveyance, or enters any public conveyance without previously notifying to the owner, conductor, or driver thereof that he is so suffering; or

(2.) Being in charge of any person so suffering, so exposes such sufferer; or

(3.) Gives, lends, sells, transmits, or exposes, without previous disinfection, any bedding, clothing, rags, or other things which have been exposed to infection from any such disorder, shall be liable to a Penalty not exceeding Five Pounds.

> "Any person who knowingly lets for hire any house, room, or part of a house in which any person has been suffering from any dangerous infectious disorder, without having such house, room, or part of a house, and all articles therein liable to retain infection, disinfected to the satisfaction of a legally qualified medical practitioner, as testified by a certificate signed by him, shall be liable to a Penalty not exceeding Twenty Pounds."

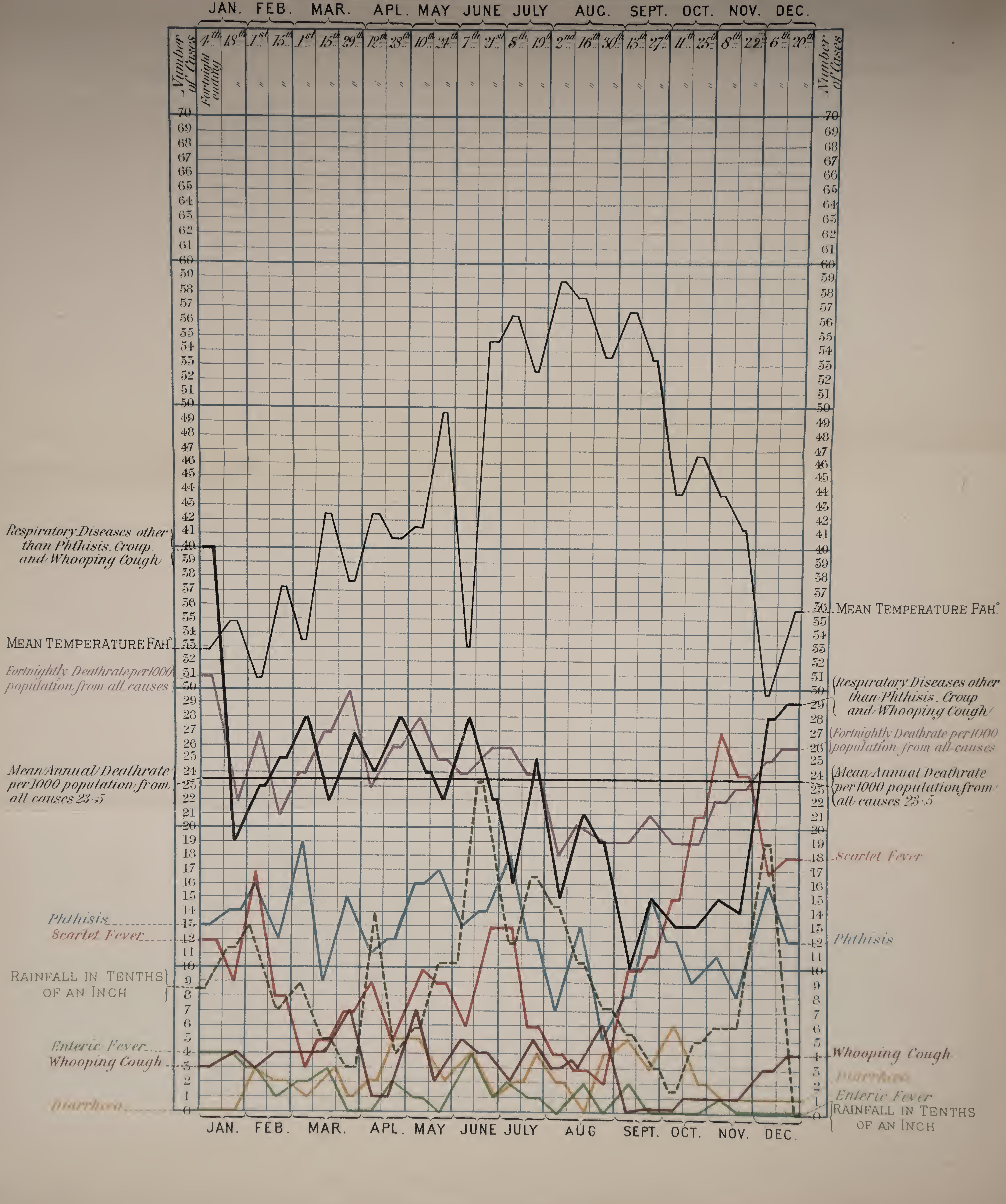
The foregoing applies to the keepers of hotels, inns, and lodging houses.

> "Any person letting for hire, or showing for the purpose of letting for hire, any house or part of a house, who, on being questioned by any person negotiating for the hire of such house or part of a house as to the fact of there being, or within six weeks previously having been therein, any person suffering from any dangerous infectious disorder, knowingly makes a false answer to such question, shall be liable to a Penalty not exceeding Twenty Pounds, or to Imprisonment, with or without hard labour, for a period not exceeding One Month."

NEWCASTLE-UPON-TYNE: A. REID, PRINTING COURT BUILDINGS, AKENSIDE HILL.

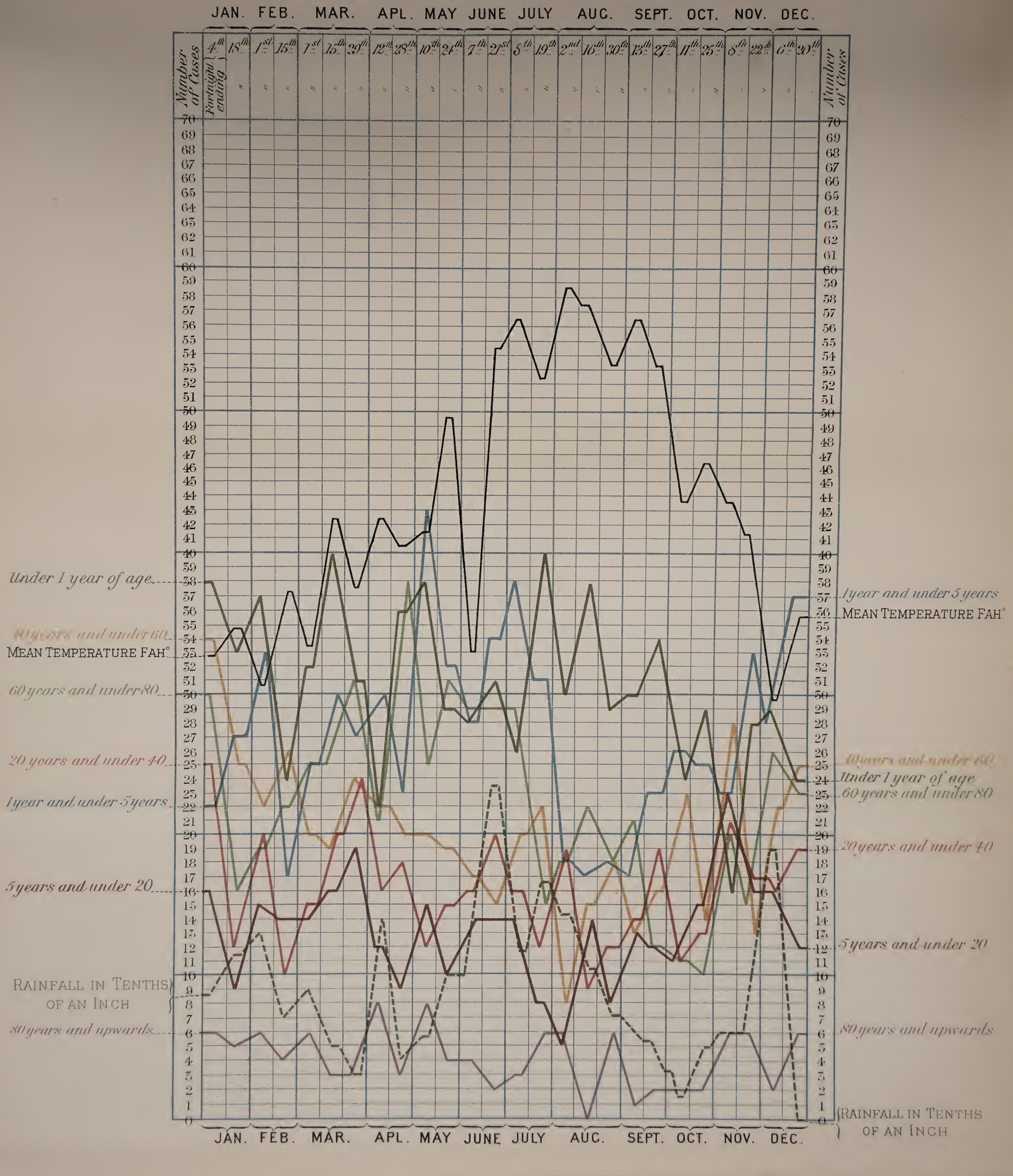
BOROUGH OF NEWCASTLE UPON TYNE, 1879.

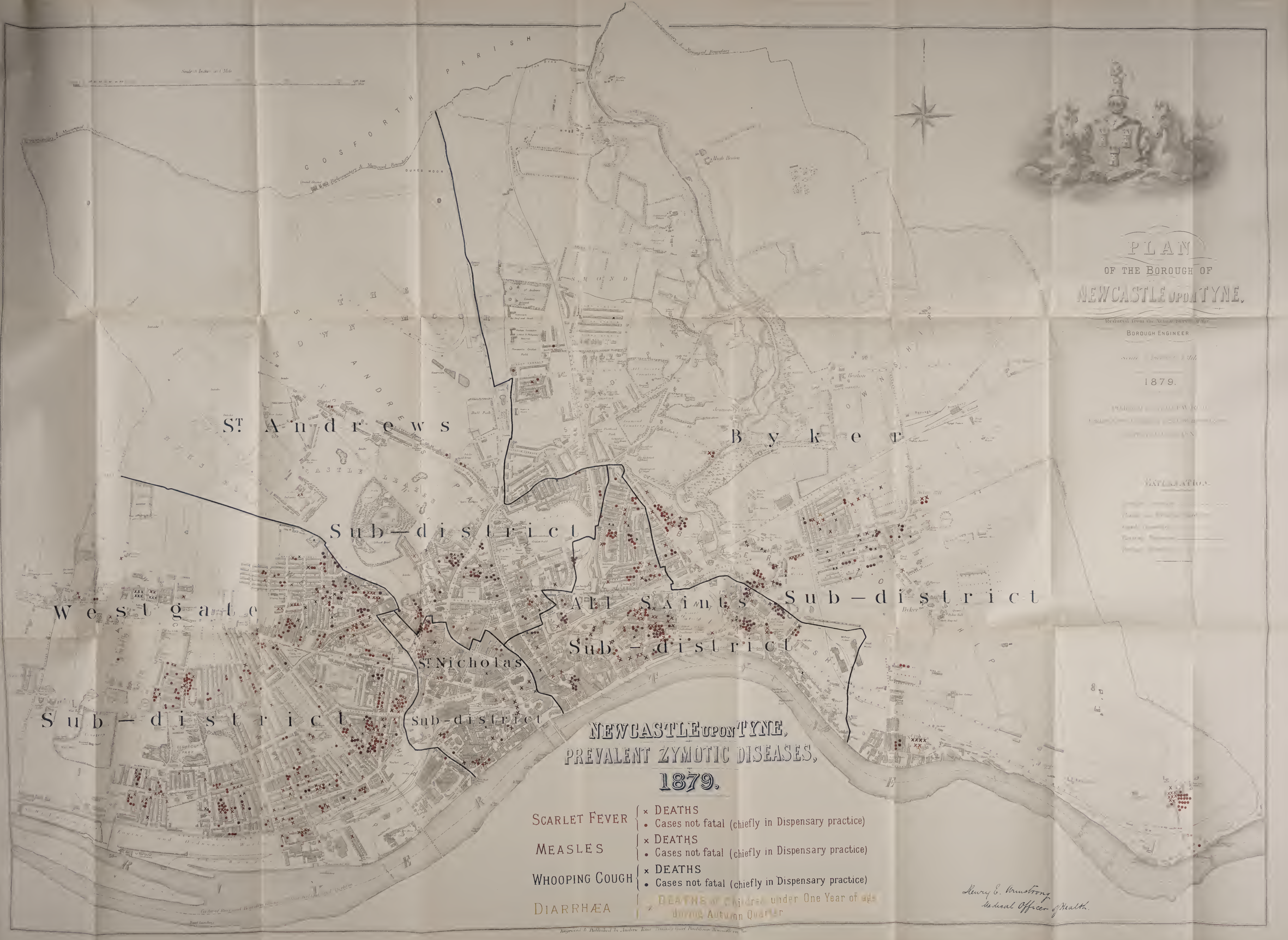
Fortnightly Diagram of Deaths from principal Zymotic Diseases and Diseases of the Respiratory Organs, with Temperature and Rainfall



BOROUGH OF NEWCASTLE UPON TYNE, 1879.

Fortnightly Diagram of Deaths from all causes at Seven Ætal periods with Temperature





NEWCASTLE upon TYNE,
PREVALENT ZYMOTIC DISEASES,
1879.

SCARLET FEVER	×	DEATHS
	●	Cases not fatal (chiefly in Dispensary practice)
MEASLES	×	DEATHS
	●	Cases not fatal (chiefly in Dispensary practice)
WHOOPING COUGH	×	DEATHS
	●	Cases not fatal (chiefly in Dispensary practice)
DIARRHÆA	×	DEATHS of Children under One Year of age during Autumn Quarter

Henry E. Armstrong
Medical Officer of Health.

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